School of Information Systems

IT Governance Structures and Their Effectiveness in Australian Universities

Michael John Hicks

This thesis is presented for the Degree of
Doctor of Philosophy
of
Curtin University

February 2012

DECLARATION

This thesis contains no material which has been accepted for the award of any degree or diploma in any university.

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

Signature: ……

Date: ……

ACKNOWLEDGEMENTS

The completion of this PhD would not have been possible without the contribution of many individuals and organisations.

Special thanks to my wife Alyse and sons Christopher and David, whose support, and sense of humour made this possible.

I would like to extend my gratitude to my supervisors, Professor Graham Pervan and Dr Brian Perrin for their support and advice throughout the course of this research.

Sincere thanks to the CIO's and other participants who were interviewed and the survey respondents for their generous involvement, contribution of time and support for this project.

Appreciation for their supportive encouragement and interest shown in my research is also extended to my colleagues in the schools of Accounting and Information Systems at Curtin University.

Abstract

This thesis advances the understanding of information technology (IT) governance research by considering the question "*How do user stakeholders influence the planning and implementation of IT governance?*" IT has become pervasive with organisations increasingly dependent on their information systems to support day to day operations and the achievement of strategic objectives (Bart & Turel, 2010; Parent & Reich, 2009; De Haes & Van Grembergen, 2009). As a result, organisations commit considerable resources into IT assets to meet the needs of their employees and other stakeholders (Nolan & McFarlan, 2005). Although the importance of IT governance to business has increased there has been little research into the influences that help determine the planning and implementation of the mechanisms that shape the IT governance process. In addition, there is a need to develop a better insight into stakeholder relationships to analyse strategic change in organisations (Myllykangas, Kujala, & Lehtimäki, 2010).

This thesis addresses these gaps in the IT governance literature by providing a deeper understanding of the relationship between the planning and implementation of IT governance, the mechanisms of IT governance, and user stakeholders, from a stakeholder theory perspective. A mixed methods approach using a quantitative survey and a qualitative case study is employed. The research proposes a conceptual model developed from the literature to represent the influence user stakeholders have on the IT governance planning and implementation process. A positivist paradigm is used to explore the research topic and to confirm and subsequently validate the research model. Stakeholder theory is used to help explain the process represented in the model and to answer the research questions developed from the gaps identified in the literature.

The key findings of this research are: (i) users have the potential to add value to the IT governance planning and implementation process; (ii) user support and acceptance is an important contributor to IT governance; and (iii) the influence of user stakeholders should be taken into consideration in IT governance planning and implementation. Universities participating in the study were found to share a common IT related history that evolved over time and was unplanned on a university level. Issues of lack of alignment of IT with

business strategies, unmanaged IT related risk, and inefficient use of IT resources had led to comprehensive reviews of the IT function and the subsequent implementation of IT governance. It was found that user stakeholders at the faculty level did influence the planning and implementation of IT governance and the benefits of their involvement are recognized and valued by the IT governance decision makers. In contrast the research found at the individual level user stakeholders wanted to be involved in the IT decision making but felt they had no influence and would have little impact on the decisions that affected them.

The application of stakeholder theory to help explain the findings provides a valuable insight into the influence of user stakeholders on the planning and implementation of IT governance. A paradox was found in that although user stakeholders were accepted as legitimate, they were not always involved in decisions that impacted on them. The normative and descriptive contradiction, as described by Sonpar, Pazzaglia, & Kornijenko (2010), was also identified in the IT governance planning and implementation process. The normative and descriptive contradiction was found in that those user stakeholders who received the most attention where not always the ones identified by the IT governance decision makers as those who should have the most influence.

The research found the research orientation of the university and the resources available had a direct impact on the degree of centralisation of IT decision making. Centralisation in turn affected the degree of user influence on IT governance planning and implementation and the level at which the influence was exercised. The research highlights to universities that they need to ensure stakeholders, including users, are involved in the design of the IT governance process and its ongoing operation. Failure to fulfil the needs of stakeholders can lead to abhorrent behaviour and adversely affect the IT governance operations. This study provides practical guidance to IT management and university executive on the importance of recognising the key influences on the design and ongoing operations of IT governance. The research model detailed in this study gives an informative guide to the critical user influences and their effect on the IT governance process. The research has demonstrated that IT governance is a complex process and to

ensure its success, institutions should consider both the social and economic influences and impacts.

This research makes an important contribution to IT governance research and theory by identifying the influence user stakeholders have on the IT governance planning and implementation process. The application of stakeholder theory in the research addresses the gap in the literature relating to understanding the influences on the planning and implementation of IT governance in the context of stakeholder theory. The benefits and issues that arise from user stakeholder influence are also explored and provide a deeper insight into the IT governance planning and implementation process for the guidance of organisations undertaking this process. The research conducted should encourage further research into IT governance and the involvement of user stakeholders in the planning and implementation stage.

TABLE OF CONTENTS

List of Appendices

List of Tables.

List of Figures.

List of Abbreviations

ARC	Australian Research Council
CFO	Chief Financial Officer
CIO	Chief Information Officer
COBIT	Control Objectives for Information & Related Technology
COO	Chief Operating Officer
CSF	Critical Success Factors
DEST	Department of Employment, Science and Training
DVC	Deputy Vice Chancellor
HESA	Higher Education Support Act 2003
ICT	Information and Communications Technology
IEG	International Education Guideline
IFAC	International Federation of Accountants
IS	Information Systems
ISACA	Organisation formerly known as the Information Systems Audit and Control Association, now known only by its acronym
IT	Information Technology
ITGI	IT Governance Institute of ISACA
KPI	Key Performance Indicators
ROI	Return on Investment
RQ	Research Question
VC	Vice Chancellor
VP	Vice President

Chapter 1 – Introduction

1.1 Introduction

IT has become pervasive with organisations increasingly dependent on their information systems to support day to day operations and the achievement of strategic objectives (Bart & Turel, 2010; De Haes & Van Grembergen, 2009; Parent & Reich, 2009). As a result organisations commit considerable resources into IT assets to meet the needs of their employees and other stakeholders (Nolan & McFarlan, 2005). Consequently "corporate information assets can account for more than 50% of capital spending" (Nolan & McFarlan, 2005, p96). IT related expenditure is expected to continue to grow (Bart & Turel, 2010; Gillies, 2005). With the increase in the reliance on IT and the associated increasing cost of IT assets, organisations need to commit to governing their IT activities and investment more effectively and efficiently (De Haes & Van Grembergen, 2009).

The advantages of user stakeholder participation in the ongoing IT governance process have long been recognized (Gillies & Broadbent, 2005; Voloudakis, 2010). The literature identifies many mechanisms through which user participation can be developed (see for example Agee, 2005; Kuhn, Brookes, & Bellos, 2008; Voloudakis, 2010). The value of user participation in various IT activities related to IT governance, such as systems development, have also been touted (Terry & Standing, 2004). Aspects of IT governance, including alignment of IT strategies with business strategies, have been found to be more effective with user involvement at all levels of the organisation (Trubitt & Overholtzer, 2009; Voloudakis, 2010). Despite the recognition of the value of more user involvement to improve IT governance there has been little research on user stakeholder influence in the planning and implementation of IT governance.

The value that may arise through improving IT governance by considering user stakeholder influence may go unrealized. In the current business environment that demands improved IT governance, every potential avenue that may contribute to such a goal needs to be considered. This research will gather insight into how user stakeholders

influence the planning and implementation of IT governance and in the process consider whether such influence is beneficial to IT governance.

The remaining sections of this chapter will present the background to the research, the research thesis topic, an overview of the research methodology, the contribution of the thesis, an overview of the scope and limitations of the research, an outline of the thesis by chapter, and will finish with a summary of the chapter.

1.2 Background to research

IT governance can be defined as, “The process of controlling an organisation’s IT resources.” (Hunton, Bryant, & Bagranoff, 2004, p.2). Specifically included in the ambit of IT resources are information, systems and technology. IT governance is an important aspect of an organisation’s enterprise governance (Hunton et al., 2004). IT governance is the system established within an organisation to direct and control IT both now and in the future (Standards Australia Committee, 2005, paragraph 1.6.2). The Standards Australia Committee (2005) specifically includes IT goal alignment with the strategic goals of the organisation and ongoing monitoring of this alignment process to ensure corporate goals are achieved as part of IT governance.

There are several definitions of IT governance but these definitions have seven key elements in common (ISACA IT Governance Institute, ND). These are, (i) responsibility of the board of directors, (ii) protection of shareholder value, (iii) ensuring risk transparency, (iv) directs and controls IT investment, opportunity, benefits and risks, (v) aligns IT objectives and goals with those of the business, (vi) supports the current operation but prepares for the future, and (vii) is integrated into the corporate governance structure.

The term ‘user’ has been defined to include senior management, middle management, and the staff who regularly interact with the IT activities (Land & Hirschheim, 1983). The definition of stakeholders includes those groups or individuals that are involved in or

are affected by the achievement of the organisations goals (Freeman, 1984). For the purposes of this research user stakeholders are defined as management and staff of the organisations that use the IT resources to contribute to the achievement of the organisations goals.

Many of the mechanisms of IT governance suggested in the literature are designed to foster and support user participation in IT governance. Examples include: user and central IT relationship management (Trubitt & Overholtzer, 2009), user representation on IT steering and advisory committees (Barton, 2003; Huang, Zmud, & Price, 2010), business unit and IT coordinated planning (Gillies & Broadbent, 2005), and transparency of IT decision making (Guildentops, 2004; Gillies, 2008). The literature gives three advantages of user participation: (i) discouragement of behaviour inconsistent with IT governance, including acquiring IT assets outside established policies (Barton, 2003; Gillies & Broadbent, 2005); (ii) improved alignment with user needs (Barton, 2003; Huang et al., 2010); (iii) reducing IT risk related to user behaviour (Voloudakis, 2010).

Several studies (see for example Gillies & Broadbent, 2005) advocate the importance of user influence and participation in and on the IT decision making in the ongoing IT governance process yet little is said about user influence on the planning and implementation of IT governance. It is well established that there must be a planning and implementation of IT governance as IT governance is a planned and formal process that does not occur by accident (Dowse & Lewis, 2009; Weill & Ross, 2004a). While the mechanisms of user participation are well explored in the literature, the influences on the planning and implementation process for IT governance that puts these mechanisms in place is not well established. This research will go some way to addressing this omission.

1.3 The research topic

As a result of the proliferation of research involving user stakeholder participation in the ongoing operation of the IT governance mechanisms the topic of this research will focus on user stakeholder influence in the planning and implementation stage of the IT

governance process. This research will also help bridge the gap between research on user influence in the ongoing operations of IT governance and research into user influence in the planning and implementation of IT governance.

This research proposes that: "*One of the key factors in the ongoing operation of IT governance mechanisms is the participation of user stakeholders. It is put forward that user stakeholder influences should be taken into consideration in the initial design and implementation of IT governance. The consideration of user stakeholder influence includes designing an IT governance structure that meets the needs of the user stakeholders through achievement of the essential outcomes of alignment with business strategies, efficient use of IT resources, and comprehensive IT risk management*".

The use of theories to support research adds to its rigor and scholarly impact (Schneberger, Pollard, & Watson, 2009). In order to better understand the IT governance process and the influence of user stakeholders the research applies an organisational theory. Stakeholder theory has been selected as it helps to explain organisational relationships with a particular group of stakeholders and strongly aligns with the thesis topic that specifically refers to the influence of user stakeholders. Stakeholder theory holds that internal stakeholders, such as users, should be considered in the decision making of the organisation (Donaldson & Preston, 1995; Friedman & Miles, 2004). This research will explore whether that consideration has been extended to the IT governance planning and implementation process. Other organisational theories are likely to also provide valuable insight into the thesis topic, but to ensure a comprehensive coverage within the research resource limitations the application of one organisational theory is considered appropriate. Justification for selection of stakeholder theory is discussed in detail in Chapter Three. The literature in regard to stakeholder theory is considered in-depth in Chapter Two.

The research involves eight case studies selected from public universities in Australia. Public universities in Australia were selected for a number of reasons, including: (i) universities are complex organisations highly dependent on their IT, as such the research will address a significant area of concern: (ii) universities are generally supportive of

research studies and likely to support the research; (iii) it allows the exploration of how IT governance differs in organisations of similar nature; and (iv) the limiting to Australian cases avoids the complications that may arise from the different laws and environments that may exist in other countries. The basis for selection of the case studies is explained in detail in Chapter Four.

Chapter Two will review the literature in more depth in respect of user involvement in the IT governance process and other related areas in order to identify gaps in the literature from which specific research questions can be developed.

1.4 The research method

A multiple case study strategy was used in this research to permit a variety of sources, data, and research methods to be employed (Denscombe, 1998). This qualitative approach enabled a flexible and thorough approach to the in-depth study of IT governance mechanisms and the user stakeholder influences that contributed to their planning and implementation within eight individual universities. In addition a survey, involving quantitative analysis, was used to gather data from IT users in each of the cases studied. The use of a survey enables a wide range and a large number of users to participate in a study with a minimal investment in development, distribution, and analysis (Glasow, 2005). The combination of both qualitative and quantitative approaches allowed the use of methodological triangulation to increase confidence in the analysis of the data (Tellis, 1997; Gable, 1994).

Phase	Research Design	Outcome of phase
Phase 1:	Define research context & perform literature review.	Research questions to address the gaps in the literature that are identified.
Phase 2:	Develop research model.	A research model based on the literature.
Phase 3:	Initial testing & refinement of research model. (Pilot case study)	Finalised research model.
Phase 4:	Confirmation & completion of model. (Multiple case studies & user survey)	Validated model updated to reflect the research findings.
Phase 5:	Interpret findings.	The completed research model interpreted and the findings of the research presented.

Table 1.1: Research phases.

Table 1.1 shows the five phases of the study, which employed a positivist paradigm. The major outcome of phase 1 is the research questions that are developed in accord with the gaps identified in the literature. A research model based on the literature and reflecting the research questions is proposed in phase 2. The research model is refined in phase 3 and confirmed through multiple case studies and a survey of user stakeholders in phase 4. Phase 5 completes the thesis with the presentation and interpretation of the findings. The methods used in this research were specifically selected to focus on the research topic and the research questions developed in Chapter Two, as well as to construct and validate the research model.

1.5 Thesis contribution

Despite the growth in IT governance research, there has been little research into the influence of user stakeholders on the planning and implementation of the mechanisms of IT governance. The research that does exist into user stakeholders and IT governance concentrates on user participation in the ongoing operations of IT governance and is largely descriptive in nature (see for example Terry & Standing (2004)). These studies have not led to any explanation of how user stakeholders can influence the planning and

implementation of IT governance or the benefits that may be associated with the consideration of such influence in designing the IT governance mechanisms. This thesis aims to address this gap in the literature by determining an explanation for what influences user stakeholders have on the design and implementation of IT governance and the associated benefits. Included in the explanation of user stakeholder influence will be a research model developed from the literature on IT governance and confirmed through the cases studied.

This thesis will contribute to a better understanding of the influence that user stakeholders may have on the planning and implementation of IT governance and how this relates to their participation in the mechanisms of IT governance. As such the research will contribute to the body of knowledge on IT governance and will be of significant importance to the information systems, management, and other professions concerned with the governance of strategic IT resources. The identification of the influence user stakeholders have on the mechanisms and outcomes of IT governance through the planning and implementation process will assist managers and the IT executive in the design, improvement, and acceptance of IT governance.

The results of the cases studied (Chapters Five to Seven) indicate that all have, or plan to implement IT governance. In the planning and implementation process the participating universities have recognised the importance of user stakeholder influence in determining the IT governance mechanisms. The level at which the influence was exercised varied but tended to be at the faculty level. The survey indicated that individual users did not feel they had been consulted adequately and that the quality of the IT activities would be improved if they were consulted.

The study also contributes to the literature in regard to the application of stakeholder theory to explain the IT governance planning and implementation process. The research found that stakeholder theory could be applied to the case studies to help explain the influence of the user stakeholders on the IT governance planning and implementation process.

1.6 Delimitations of scope and key assumptions

The defining of the scope of the research being undertaken is crucial to an effective research program (Perry, 1998). This research centres on IT governance but considers the application of stakeholder theory to explain the IT governance planning and implementation process. Despite IT governance being an important concern for many different types of organisations, this research is limited to Australian public universities. Incorporated under an Act of State Parliament, Australian universities are a special form of public corporate entity.

Universities are complex organisations with many stakeholders both internal and external, but the study considers only user stakeholders. There may be many other stakeholder influences on the IT governance planning and implementation process. Also the research employs stakeholder theory when there are several other organisational theories that may help to explain the process being studied. The selection of user stakeholders and stakeholder theory gives the research more clarity and focus.

The research data gathering was limited to a small portion of user stakeholders in each of the participating universities. Although efforts were made to select interviewees who were representative of the broader university employee population and a survey was employed to include as many respondents as practical, the number of stakeholders involved remained relatively small. Those interviewed were knowledgeable of the areas being studied and represented a diversity of perspectives. The number of participants in the research was the maximum that could be accommodated with the resources available.

1.7 Outline of the thesis

This thesis consists of nine chapters:

Chapter One provides an introduction and background to the research. This includes the thesis topic, an overview of the methodology, justification for the research and a discussion of the research scope.

Chapter Two provides a summary of the literature pertaining to the areas related to the thesis topic, *"One of the key factors in the ongoing operation of IT governance mechanisms is the participation of user stakeholders. It is put forward that user stakeholder influences should be taken into consideration in the initial design and implementation of IT governance."* The consideration of user stakeholder influence includes designing an IT governance structure that meets the needs of the user stakeholders. The literature in regard to the thesis topic and related research is discussed under four headings: (i) the mechanisms of IT governance, with particular attention to user participation and planning; (ii) the decision making structures of Australian public universities; (iii) IT governance in universities, focusing on issues related to user participation in IT decision making; and (iv) stakeholder theory as it may apply to IT governance planning and implementation. Also two areas related to the research are discussed: (i) stakeholder theory; and (ii) Australian public universities.

The research questions are then developed in Chapter Two to address the gaps in the literature that are identified. The literature review also provides the background information used to develop the research model in Chapter Three.

The most significant gap identified in the literature is that little of the research considers the influence of major stakeholders on the IT governance planning and implementation process. Also, few of the studies in IT governance consider the perspective of stakeholder theory to explain the influences on IT governance. There is little in the literature dealing with IT governance as a whole (Wilkin & Chenhall, 2010). The primary research

question (research question 1) developed to address the identified gaps in the literature is: "*How do user stakeholders influence the planning and implementation of the mechanisms of IT governance in Australian universities?"*

Three subordinate or secondary research questions will be used to support the consideration of the primary research question. The secondary research questions are:

2. *What are the typical mechanisms of IT governance implemented within Australian universities?*
3. *To what extent do user stakeholders participate in the IT governance mechanisms in Australian universities?*
4. *Do user stakeholder attitudes and perception of IT governance influence the IT governance mechanisms that have been implemented in Australian universities?*

The research applies stakeholder theory to help explain the influence of user stakeholders in the IT governance planning and implementation process. The research questions will address the gaps in the literature by focusing on a relatively neglected aspect of IT governance planning and implementation from a perspective of stakeholder theory.

Chapter Three develops the research model and gives details of its structure and refinement. How the research questions relate to the research model, and how they assist in confirming and verifying the model, is also discussed.

Chapter Four discusses the research methods used in this research, including the theoretical and practical aspects of the study. Specifically included are: (i) the theoretical approach to the research; (ii) the case study methodology used; (iii) a summary of the case study interview approach; (iv) a summary of the survey approach, including details of the survey instrument; and (v) details of how the data from the interviews, survey, and other sources was analysed.

Chapter Five discusses the findings from the cases studied that focus on the organisational factors that affect the planning and implementation of IT governance,

including the influence of user stakeholders. The organisational influences considered included: (i) the size of the university; (ii) the degree of research orientation of the university; (iii) the resources available to the university; and (iv) the degree of centralisation of decision making within the institution.

The analysis of organisational factors indicated that research orientation and resources available had a direct impact on the degree of centralisation of IT decision making. Centralisation in turn affected the degree of user influence on IT governance planning and implementation and the level at which the influence was exercised.

Chapter Six discusses the influence of the user stakeholders on the IT governance planning and implementation process from the perspective of the user stakeholders. The principal source of data in this chapter is responses to the survey of user stakeholders, supported by the interviews of user stakeholders. The findings indicated that individual user stakeholders wanted to be involved in the IT decision making but felt they had no influence and would have little impact on the decisions that affected them.

Chapter Seven identifies and discusses the mechanisms of IT governance that have been planned and implemented in the universities participating in the research. In particular mechanisms involving user participation are analysed and related to the outcomes that IT governance is expected to achieve. The outcomes of IT governance are analysed to determine if they motivate user stakeholders to participate in and exert influence over the IT governance planning and implementation process. The principal sources of data in Chapter Seven are the interviews of the IT executive, business executive, and the user stakeholders.

Chapter Eight collates and relates the data from Chapters Five, Six, and Seven together and contains the collective analysis of the findings. As such Chapter Eight answers the primary and secondary research questions and contains the overall findings of the research. The chapter concludes that user stakeholders at the faculty level do influence the planning and implementation of IT governance and the benefits of their involvement are recognised and valued by the IT governance decision makers. The research also found

that stakeholder theory can be used to provide a valuable insight to help explain the process. There are, however, some contradictions and paradoxes revealed in the findings.

Chapter Nine gives an overview of the research, a summary of the major findings, and a discussion of the confirming and validation of the research model. The research model was found to be validated by the findings of the research and provides a unique contribution to the literature on IT governance planning and implementation. The other findings of the research either confirm the existing literature or uniquely add to the literature on IT governance and the influence of user stakeholders. As such the research findings will provide a valuable guide to IT practitioners and those planning to implement IT governance. Chapter Nine includes a discussion of the limitations of the study and suggestions for future research.

The appendices attached to the thesis include: a copy of the case study protocol, a copy of the interview protocol for each level of interviewees, a copy of the user survey instrument, the letter inviting the institution to participate in the study, additional interview comments pertinent to the findings, and the research codes used in analysing the interview data.

1.8 Chapter summary

This chapter gives an introduction to the research and an outline of the thesis.

Organisations are increasingly reliant on their IT activities to meet their strategic and operational objectives and need to commit to governing their IT activities and investment more effectively and efficiently (De Haes & Van Grembergen, 2009). Studies have shown that user stakeholder participation in IT decision making has many benefits (Agee, 2005; Voloudakis, 2010). Despite the interest in improving IT governance and the recognition of the benefits of user stakeholder participation, there has been little research into the influence of user stakeholders on the planning and implementation of IT governance. This research will address the gap in the literature.

The primary objective of the research is to explore the "*influence of user stakeholders on the planning and implementation of IT governance*" in Australian public universities using stakeholder theory to assist in explaining the planning and implementation process. In addressing the thesis topic the research attempts to establish and clarify the link between the organisational characteristics, stakeholder influence, and the IT governance mechanisms of the universities participating in the study. The literature related to the thesis topic is discussed and the gaps in the literature identified and used to develop the research questions. A research model is developed from the literature and validated through confirmation against the research findings. The research model and other outcomes from the research will provide valuable guidance to universities and other similar organisations that are implementing IT governance. The research uses a mixed methods approach, with qualitative case studies and a quantitative survey to explore the topic from a positivist stance.

The next chapter will discuss the literature related to the research and in particular consider related studies. From the discussion the gaps in the literature are identified and used to develop the research questions.

Chapter 2 – Literature Review

2.1 Introduction

The purpose of this chapter is to review the literature related to the thesis topic, including the areas of IT governance, university governance, university IT governance, and stakeholder theory. This review first considers the definition of IT governance in section 2.2, the mechanisms of IT governance in section 2.3, the outcomes of IT governance in section 2.4 and decision making structures in section 2.5. Next, section 2.6 focuses on the literature related to universities that discusses two areas: (i) the corporate structure and governance of universities; and (ii) IT governance issues specific to universities, including the impact of centralisation and user participation on IT governance. Section 2.8 will then discuss the relevant literature on stakeholder theory. Gaps identified in the literature are discussed in section 2.9. The chapter includes a discussion of the development of the research questions in section 2.10 and the importance of the research is covered in section 2.11. The chapter concludes with a summary in section 2.12.

The thesis proposes that a key influence on the selection of IT governance mechanisms is that of the user stakeholders. Central to the theme of the thesis is the understanding of what constitutes IT governance and the mechanism that will implement IT governance. Establishment of an understanding of the current research into IT governance generally and IT governance in universities specifically, establishes the theoretical context in which to consider the influence of various stakeholder groups. From the discussion of the research the gaps in the literature are revealed and related to the justification for the research. In addition, the examination of the literature will be used to construct the research model as discussed in Chapter Three.

2.2 Definition of IT governance

IT governance can be defined in terms of an organisational construct as, “Specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT” (Weill & Ross, 2004b, p.8). IT governance can also be described as, “The process of controlling an organisation’s IT resources.” (Hunton et al., 2004, p.2). Specifically included in the ambit of IT resources are information, systems and technology (Hunton et al., 2004).The Standards Australia Committee (2005 paragraph 1.6.2) defines IT governance as the system established within an organisation to direct and control IT both now and in the future. IT governance includes two key components: (i) the role in promoting the organisations strategic objectives as well as enabling business systems and associated processes; and (ii) the risk management and control of IT and related areas (Hunton et al., 2004).

There are several other definitions of IT governance but these definitions have seven key elements in common (ISACA IT Governance Institute, ND). These are, (i) responsibility of the board of directors, (ii) protection of shareholder value, (iii) ensuring risk transparency, (iv) directs and controls IT investment, opportunity, benefits and risks, (v) aligns IT objectives and goals with those of the business, (vi) supports the current operation but prepares for the future, and (vii) is integrated into the corporate governance structure.

Significantly the various definitions of IT governance all acknowledge it as being a dynamic or ongoing process that ideally consists of a continuous cycle of monitoring, review, and corrective action or adjustment when necessary (Hunton et al., 2004; Standards Australia, 2005; ISACA IT Governance Institute, 2005). IT governance is an important aspect of an organisations corporate governance obligation (Hunton et al., 2004; Weill & Ross, 2004a). In the Australian context corporate governance is also viewed as an ongoing process not one that can simply be invoked as needed (Lucy, 2004).

However defined, it is clear that there are many ways to implement IT governance, but it is a planned and formal process (Weill & Ross, 2004b). The next section discusses the mechanisms of IT governance to determine which mechanisms may be present in the universities participating in this study.

2.3 Mechanisms of IT governance

This section discusses the mechanisms that are considered by the literature to contribute to IT governance. Mechanisms are defined as "the agencies or means by which a particular effect is produced or a purpose is accomplished" (Macquarie dictionary, 2009, p1337). For the purposes of this research the effect or purpose to be accomplished is IT governance. Agencies or means includes the processes, policies and principles the organisation employs in implementing IT governance.

The mechanisms of IT governance are central to the research topic in two ways: (i) that user stakeholder participation is a key factor in the ongoing operation of the IT governance mechanisms; and (ii) user stakeholders will be motivated to influence the design of the mechanisms because the mechanisms themselves will contribute to meeting the needs of these users. A gap in the literature identified by Wilkin and Chenhall (2010) is that little of the literature addresses IT governance as a whole and considering the operation of the mechanisms together. This discussion of the literature is used to determine which mechanisms may be present in the IT governance structure. The data collection activities of this research will include identifying these mechanisms in the universities participating in the study.

It is clear that IT governance has many mechanisms, though it is equally clear that the omission of any particular one is not a determinant of a defective or non-existent IT governance function (Dowse & Lewis, 2009; Weill & Ross, 2004a). These mechanisms are also described as critical success factors (CSF). Satisfactory results in CSF's indicate: "competitive performance for the individual, department or organisation" (Nfuka &

Rusu, 2011, p.1420). Some of the key mechanisms or CSF's that are associated with effective IT governance are:

(i) A coordinated group of mechanisms & a holistic approach.

IT governance requires the design and implementation of a coordinated group of mechanisms to enact IT governance (De Haes & Van Grembergen, 2009; Nfuka & Rusu, 2011). For example, IT steering committee, budget processes, charge-backs, service level agreements, alignment processes, and formal communications (De Haes & Van Grembergen, 2009; Weill & Ross, 2004a). The prominent concern is that the mechanisms work together to achieve a comprehensive IT governance structure that includes the entire organisation (De Haes & Van Grembergen, 2009).

(ii) Formally assigned decision levels & accountability.

Multilevel formal IT decision making structures need to be defined within the organisation (Weill & Ross, 2004a). Decision structures and styles often vary according to the IT level decision being made within the one organisation (ibid). Formal and clearly articulated accountability and responsibilities at all levels of IT and business decision making are an important mechanism of IT governance (Gillies & Broadbent, 2005).

(iii) Transparency of IT decision making.

There needs to be transparency of IT governance and IT operations, including of costing arrangements (Bucher, 2001; Gillies, 2008). Transparency should relate to all levels of IT decision making and serves a multitude of purposes (ibid). The benefits of transparency include ensuring user expectations are in line with the reality of IT resources available, thereby helping to reduce abhorrent user behaviour such as backdoor acquisition of applications and equipment that can create fragmentation (ibid).

(iv) Communication mechanisms.

An important mechanism of IT governance is the richness and extent of communication mechanisms established between business management and IT management, including the degree of knowledge sharing with all levels of users (Barton, 2003). Representation of the business executive on IT strategic committees is one mechanism to enhance communication (Weill & Ross, 2004b; Barton, 2003). Much can be achieved by engaging users in the business strategies and their association with IT strategies (Fernandez, 2008). Effective communication with all levels of the organisation is one of the driving forces behind successful IT governance and management (Ali & Green, 2009; Agee, 2005; Nfuka & Rusu, 2011).

(v) CIO appointed at an executive level.

The status of the CIO or equivalent IT leadership is important to allow IT a voice at executive levels (Banker, Hu, Pavlou, & Luftman, 2011; Gillies & Broadbent, 2005; Nfuka & Rusu, 2011). One of the key advantages to a high level CIO is alignment of IT strategy to the business strategy and the ability for the IT strategy to be implemented throughout the organisation. The CIO is a leader and advocate of technology as opposed to a manager of IT mechanics (Chester, 2006).

(vi) Review of the IT governance function IT.

IT governance is not a static concept but a process deeply embedded in the organisational structure and inseparable from it (Gillies & Broadbent, 2005; Nfuka & Rusu, 2011). As such it requires ongoing monitoring and review to ensure it is effective and working as intended (ibid). The review process should be integrated not just into the strategic IT governance level but at all IT management levels that express the strategic IT plan into operational reality (Gillies, 2008).

(vii) Use of an internal control framework.

That an internal control framework is used, for example COSO or ITIL and that a Strategic umbrella framework is implemented, such as CobiT (Barton, 2003). The Planning and Organisation Domain of CobiT includes control objectives related to IT governance. CobiT is used in conjunction with internal control frameworks to provide a strong internal control structure and contribute to effective IT governance through a structured process of governance and risk management (Hunton et al., 2004).

(viii) Performance metrics to gauge IT governance success.

These should be simple, understood by the executive members of the IT Strategic committees, and gathered on a regular, consistent basis to establish trends (Gillies & Broadbent, 2005). Measures should be appropriate to the executive decision making level: that is overview not operational to avoid a loss of focus of governance issues (ibid). The range of IT activities should be reported on, including planning, acquisition of new systems, operating, and other management performance measures (ibid).

(ix) High level executive direction.

There needs to be high level strategic direction for IT (Nfuka & Rusu, 2011). For example, executive level IT steering committee (De Haes & Van Grembergen, 2009). High level IT committees have importance for two core reasons (Barton, 2003; Weill & Ross, 2004b): (i) to set IT strategy; and (ii) to provide alignment of IT with business strategy through business executive representation on the IT committees.

For overall successful IT governance, there must be high level support from the business executive for the governance structure and processes that are in place or are proposed to be implemented (Gillies & Broadbent, 2005; Kallenbach & Scanlon, 2007; Nfuka & Rusu, 2011). The IT governance deployment consists of structures, processes, and relational mechanisms (De Haes & Van Grembergen, 2005). The mechanisms of IT

governance can be classified in accord with these groupings (ibid). Structures include those IT governance mechanisms of clearly defined roles and responsibilities, CIO on the board, and IT steering committee (ibid). Processes involve the strategic planning process, service level agreements, and the use of frameworks (ibid). Relational mechanisms include communication between IT and business, and stakeholder participation and collaboration. The optimal mix of these facets depends on the organisation implementing them (De Haes & Van Grembergen, 2008; Dowse & Lewis, 2009).

The human element is often overlooked but is an important aspect of corporate governance and, by extension, IT governance (De Haes & Van Grembergen, 2008; Hancock, 2005; Hancock & Parakala, 2008). A piecemeal approach to governance within organisations leads to internal communication overload and employee confusion created by conflicting expectations and priorities (Hancock, 2005). In order to create a coordinated group of governance mechanisms and to avoid employee confusion requires a holistic approach to IT governance (De Haes & Van Grembergen, 2009; Nfuka & Rusu, 2011; Weill & Ross, 2004a). There is a need for governance awareness, particularly in large and diverse organisations (Hancock, 2005; Uehara & Akino, 2010).

Although the concept of stakeholder participation is a feature of several of the mechanisms of IT governance, the influence stakeholders exert through this involvement is largely unexplored in the literature. As illustrated in the discussion in this section there are a number of key mechanisms that are considered to contribute to IT governance. The core theme in the literature discussed is that no one mechanism is necessary for IT governance but the IT governance should consist of a number of these mechanisms implemented in a coordinated, planned and formal structure (Dowse & Lewis, 2009; De Haes & Van Grembergen, 2009).

The implications of the discussion are threefold: (i) the key mechanisms of IT governance that this research will attempt to identify in the universities studied are drawn from the literature discussed in this section; (ii) many variations of IT governance structures are possible (Dowse & Lewis, 2009; De Haes & Van Grembergen, 2009). The universities in this study are unlikely to share identical structures, although they may share some

mechanisms in common; and (iii) beyond this there can be no assumption about the mechanisms of IT governance that may be present in the case studies in this research.

The literature establishes the mechanisms of IT governance. How these criteria of IT governance are implemented within any individual organisation, including a university is dependent on the structure, culture and other influences (Dowse & Lewis, 2009). In terms of this study these mechanisms need to be identified in the case studies and then analysed to determine the influence of the various stakeholders. Analysis will include determining the potential for involvement by stakeholders as well as their actual involvement in the mechanisms identified. This discussion will contribute to the formulation of research question two (as further discussed in section 2.10), which relates to identifying the mechanisms of IT governance the universities have implemented.

As discussed in section 2.2 the process of IT governance should play an important role in the organisations governance and produce a number of outcomes. The next section discusses the roles and outcomes of IT governance.

2.4 The role and outcomes of IT governance

This section discusses the outcomes of IT governance as they may, in accord with the importance of the outcome to the user, impact on the strength of the influence of the various groups of user stakeholders. The strength of influence is particularly important in determining ‘what influences’ the user stakeholders exert.

The literature discusses many outcomes and roles that are expected from IT governance. For example, Willson and Pollard (2009, p.99) describe six facets associated with IT governance: (i) strategic alignment; (ii) risk management; (iii) performance management; (iv) capability management; (v) control and accountability; and (vi) delivery of business value through IT. Weill and Ross (2004b, p.120) describe cost control, growth, business flexibility, and asset utilisation as four performance measures associated with IT governance.

The ITGI of ISACA refers to four focus areas of strategic alignment, resource management, risk management, and performance appraisal (ISACA IT Governance Institute, 2003). For the purposes of this research three focus areas will be defined as the outcomes of IT governance. These three categories are:

- The efficient use and deployment of IT resources, including cost control, asset utilization, and aspects of delivering business value through IT governance (Gheorghe, 2010; Willson & Pollard, 2009).
- IT's use as a strategic and operational business device, including alignment with the business goals and objectives (De Haes & Van Grembergen, 2009; Luftman & Brier, 1999). This includes growth, business flexibility, an effective internal control structure, and support for the operational business requirements of the organisation (ibid).
- The management of IT risk, both at an operational and strategic level, including facets of control and accountability (Gheorghe, 2010; 2011).

These outcomes are closely linked to the use of IT governance best practices and the successful implementation of IT governance (De Haes & Van Grembergen, 2009; Gheorghe, 2010; Simonsson, Johnson & Ekstedt, 2010). The fourth focus area of performance appraisal is treated in this research as a monitoring function rather than an outcome. The three outcomes of IT governance namely, IT risk management, efficient use of IT resources, and alignment with business objectives, are expected to assist in identifying stakeholders in the case studies and their respective influence. The identification of stakeholders is further discussed in section 2.8.

The next section discusses the typical decision structures described in the literature as supporting IT decision making. Decision structures relate to the research topic as they are one of the key mechanisms by which stakeholders can directly participate in the IT governance process and exert influence. Analysis of the IT governance decision structures will also include identification of the decision makers for the planning and implementation of IT governance.

2.5 IT governance decision making structures

This section considers the literature on IT governance decision making structures, including who makes the IT related strategic decisions. The IT governance decision makers will be responsible for planning and implementing IT governance and will also respond to the influence of user stakeholders. In addition, the IT governance decision makers will determine who participates in the IT governance process through the range of mechanisms implemented. As such this section is important to the identification of user stakeholders and the potential influence they may exert, as is central to the thesis topic.

IT governance needs to be driven from the highest level in the organisation and formed in conjunction with business strategies (Gillies & Broadbent, 2005). The role of the business executive does not end with establishing the IT governance structures but extends to an ongoing role to monitor the process and ongoing risk (ibid). Organisations with common governing mechanisms across different portfolios of assets will achieve better alignment and integration between them (Weill & Ross, 2004b). On a strategic level this implies that decision structures that share responsibilities across IT strategy and business strategy will achieve closer alignment of the two. For example, the IT steering committee should have a shared membership with the business strategy committees (Barton, 2003; Huang et al., 2010).

An IT Steering committee can be effective in producing the IT strategy to be cascaded through the organisation as part of the strategy implementation process (Barton, 2003; Huang et al., 2010). The IT Steering committee would consist of IT executive management and key business executive management, and meetings of the committee would be twice yearly (Barton, 2003). The advantages of this committee includes closer business and IT alignment and the building of important contacts and allegiances. A structure where IT strategy was determined solely by the CIO could lead to weak and limited IT strategy that is not strongly aligned with the overall strategy of the organisation (ibid).

There are three fundamental reasons that an IT Steering Committee operated in conjunction with business and IT leaders should be created (Barton, 2003): (i) the motivation for IT projects should come from business needs; (ii) the business dependency on IT is now such that IT strategy potentially has a huge effect on the entire business; and (iii) IT tends to cross many functional boundaries, including organisational business boundaries and all stakeholders should logically participate in the setting of the IT strategies.

Business collaboration in the IT decision making process can be fostered through a common language and transparency of IT costs and IT decision making (Gillies, 2008). IT projects should be strongly promoted as an integrated part of a successful business program, highlighting the need for IT strategies to support and complement the core business programs (ibid). Continuing interaction between business and IT leaders is essential to support the IT governance process (Gillies & Broadbent, 2005). Strategic decisions can be unintentionally delegated to the IT area when IT strategies are not clearly defined and are open to interpretation (ibid). The integration of business and IT planning minimises the opportunity for ad-hoc actions by central or local IT areas and assists in avoiding undesirable outcomes such as fragmentation and incompatible systems (Gillies & Broadbent, 2005, Voloudakis, 2010).

IT governance mechanisms need to be supported and complemented by appropriate business governance structures (Weill & Ross, 2004b). For example, alignment of IT strategies with business strategies cannot be achieved, no matter what IT strategy processes are in place, if the organisation does not have a process or mechanism in place to determine and articulate a clear business strategy (ibid).

The literature discussed in this section outlines the strategic level decision structures that can be put in place to plan and implement IT governance. The influence exerted by stakeholders on the IT governance mechanisms may be through these decision structures. The next section addresses governance research into Australian universities and IT governance in Australian and other universities.

2.6 Australian Universities and IT governance

This section considers the literature in relation to Australian universities generally and then specifically in respect of IT governance within these universities. The general discussion provides a context in which the influences on IT governance can be better understood and the gaps in the literature further identified. Many universities have recognised their concern with IT governance through high level reviews of their IT governance structures (Ismail, 2008). These include: Cornell University (Blustain & Goldstein, 2004), University of California Berkeley (Spicer & Pirani, 2008), Curtin University of Technology (Bhattacharjya & Chang, 2007), and Queensland University of Technology (Pirani & Salaway, 2008) to name but a few. There has not, however been any research into user stakeholder influence on the planning and implementation of IT governance in Australian universities, as is proposed in this research.

The discussion explores the literature involving case studies and other research that relates to corporate and IT governance within universities. The next section discusses the corporate governance structure of Australian universities.

2.6.1 University governance structures

This section considers the literature in respect of the general management and governance of Australian universities. IT governance is an important subset of corporate governance (ISACA IT Governance Institute, ND; Hunton et al., 2004). In the research study being undertaken the influence of stakeholders is explored. As such it is important to understand the governance structure to better understand the influence of user stakeholders.

Universities are traditionally thought of as the bastions of academic strength, steeped in collegial history (Marginson & Considine, 2000; Waugh, 2003). Governance structures were founded in academic councils and driven by the noble aspirations of academic excellence (ibid). In more recent times it has become apparent that in response to political and social pressures the way universities are governed has become far more enterprise driven (Marginson & Considine, 2000; Shattock, 2012).

Five common trends have been identified in the governance of Australian universities (Marginson & Considine, 2000). First, is a new "executive power" with the freedom and motivation to manage as the executive sees fit. The university executive leaders have adopted generic and widely accepted principles of good management. These executive leaders are described as, "They [university executive] are their own switching stations: between the external pressures and the internal changes they want to achieve" (Marginson & Considine, 2000, p.9).

Second, are innovations in the decision making structures. These are defined as, "The remaking or replacement of collegial or democratic forms of governance with structures that operationalise executive power and create selective mechanisms for participation, consultation and internal market research. There is a characteristic shift from the formal to the semi-formal: the new structures enable freedom of action and information flow, without many previous constraints of legislative forms and representative governance" (Marginson & Considine, 2000, p.9). This impacts the degree of centralisation of power within the university. Within some universities there has been a distancing of the faculties from decision making, leading to highly centralised controls (Marginson & Considine, 2000; Waugh, 2003). In other instances the executive decision making has embraced the faculties with highly decentralised decision making structures (Marginson & Considine, 2000).

Third, is an increase in the flexibility of personnel and other university resources. This flexibility also affects the placement within the university of authority and associated power (Marginson & Considine, 2000). Universities in Australia are no longer so strongly governed by legislation but are more often driven by plans and targets (ibid).

The effect of this trend has been to reduce the resistance of the faculties to the, “executive led re-engineering” (Marginson & Considine, 2000, p.10). Highly compatible with other management controlling mechanisms such as soft money budgets, this leads to more power and control at the senior executive level (Marginson & Considine, 2000).

Fourth, is the diminishing part that academic disciplines have in university governance. Academic disciplines are an obstacle to the executive’s reinvention of courses to meet market demands and the reformation of the university’s structures and often the easier relocation of resources to more favourable areas (Marginson & Considine, 2000). The result is a widespread movement away from discipline based academic departments, to cross-disciplinary schools and research centres, “in which identities and resources are amenable to a high degree of selection and restructuring from above” (Marginson & Considine, 2000, p.10).

Fifth, are the new methods of devolving certain aspects of management. These include faculty and similar collective level managers being granted budget autonomy or even responsibility for resources, within strictly defined executive plans, targets, and performance measures (Marginson & Considine, 2000). Such devolution complements the centralisation of executive power. “This [devolution] allows university leaders to throw off the constraints of pastoral responsibility and channel the burden of expectation, and blame for failure, down to their subordinates.” (Marginson & Considine, 2000, p.11).

These findings were supported by a more recent study involving semi-structured interviews with thirty six members of Australian university governing bodies (Rytmeister, 2009). This study again emphasised the complex and revolutionary changes, both external and internal that have occurred over the last two decades in higher education in Australia. In summary these have included increased competition, the emergence of corporate management structures, greater centralisation of power to the university executive, and an increased focus on strategy at the institutional level (ibid). Although in many ways becoming more like enterprises, universities do retain significant differences that should be considered. In particular, the eccentricities of academics and

academic endeavours. This stresses that there is more than one model to suit university governance (Young, 2004).

This section discussed the literature on corporate governance in universities which provides the business decision making structure in which the IT governance structure operates. The revolutionary changes occurring in university governance structures may have an impact on the IT governance structures in those same universities. As such it is an important consideration in the research being undertaken which centres on IT governance in Australian universities. The next section discusses the literature on IT governance within universities.

2.6.2 IT governance in universities

This section considers IT governance in universities, both international and domestic. The scope of the study and the research topic focus on IT governance within Australian universities. A discussion of the literature relating to IT governance in universities generally and Australian universities specifically is prudent to help establish the context of the research and to aid in identifying the gaps in the literature.

A Canadian and USA study (Pirani & Yanosky, 2005) found that: (i) the maturity of IT governance is low in universities; (ii) a majority of institutions reported they had implemented IT governance; (iii) common IT governance processes used included the active design of IT governance structures and frequent user and other stakeholder participation; and (iv) alignment of IT to business strategies is one of the top three drivers of the need for IT governance.

Participation in IT governance was widespread and from all levels within the institutions, but the participants differed in how often they were involved. The most active participants were senior IT leaders from the central IT areas, followed by the various members of the executive (Pirani & Yanosky, 2005). The study was limited to institutions and individual participants located within the USA and Canada. There was no attempt to

extrapolate or apply the findings to universities in other countries or regions. The case study did not consider stakeholder theory but looked at the roles of various stakeholders in the IT governance process.

IT leaders in universities need to understand the diverse faculties and divisions that form the modern campus and to develop strong relationships with key personnel from those areas (Trubitt & Overholtzer, 2009). This is an essential component of successfully aligning the IT objectives with those of the organisation (ibid). Such success hinges on the IT area building trust with its many constituents by assisting them through providing efficient services and helping them to leverage technology to their best advantage (Chester, 2006). IT governance is successful when the people served by the governance structures succeed in achieving their business goals (ibid).

Four pillars are considered fundamental to management of the IT area in universities (Agee, 2005). These were: (i) knowing the Organisation; (ii) fostering a collaborative decision making environment; (iii) allocating and managing resources to meet the strategic and operational priorities of the institution; and (iv) effective communication through user relationship management and building user trust.

The four pillars were employed in IT areas to implement good management practices to smooth the pathway to IT governance (Agee, 2005). Good management practices are not just relevant to IT areas but can often be overlooked in such environments due to a propensity to concentrate on technical issues.

Formal mechanisms can be particularly useful in establishing and maintaining important links between the IT area and users at all levels (Trubitt & Overholtzer, 2009). Such mechanisms in a university context include stakeholder groups to provide ongoing feedback and a forum for IT leaders to appreciate stakeholder needs and perceptions. Other mechanisms can include surveys of constituent stakeholders, regular conversational meetings hosted by the IT leaders, and other types of periodic exchanges with clients (ibid).

The discussion in this section relates specifically to the literature on IT governance in universities, including some of the issues that are evident from the various case studies that have been undertaken. In particular, the IT governance structures in many cases are adopting, at least in part, a stakeholder approach (see for example Trubitt & Overholtzer, 2009). The stakeholder approach looks at the involvement of stakeholders, such as users and business management, in IT governance and various components of IT governance, but does not apply stakeholder theory to explain their findings. Other studies (see for example Okunoye, Frolick, & Crable, 2008) apply stakeholder theory but only to limited aspects of IT management that are only indirectly relevant to IT governance. The discussion in this section is important to the study by identifying the gap in the literature, which is further discussed in section 2.9. Also it elaborates on the background of IT governance in universities as is central to the primary research question and thesis statement.

The next section looks at the literature relating to the effect of centralisation versus decentralisation of IT in universities. The main purpose of the next section is twofold: (i) to explore the literature to determine if centralisation is likely to impact the mechanisms of IT governance, which is a central component of the research being undertaken. The mechanisms of IT governance are discussed in section 2.3; and (ii) to determine whether centralisation is likely to have an effect on the influence exerted by stakeholders.

2.6.3 Centralisation versus decentralisation of IT

This section discusses the literature in regard to the degree of centralisation of IT in universities. Centralisation is an often discussed feature of IT decision making (see for example Waggener & Rickards (2007) and Voloudakis (2010)), as such it is important in gauging the influence of the user stakeholder groups at the faculty and central levels. As such it is important in determining ‘what’ influences these stakeholder groups have.

For many years there has been a move toward decentralisation of IT services in universities (Voloudakis, 2010). The trend to decentralisation has not been the result of a

planned process or any deliberate strategy but rather an evolution that has been driven by local need (ibid). The process of unplanned growth can be described as ‘organic’, implying that it develops a life of its own in local areas and continues to grow and expand once started (Voloudakis, 2010, p.5). Central IT areas tended to be centred on large scale corporate systems such as student records, finance, and human resources (McRobbie, 2006; Voloudakis, 2010). Individual faculties were largely left to develop their own IT areas to meet the faculty’s local and unique requirements (Waggener, 2010). In many institutions this has resulted in multiple small IT areas (ibid).

In an IT decentralised university, these small IT areas and related IT resources, are controlled at the faculty or departmental level, providing a strong faculty aligned IT function (Miller, 2002). The downside is that alignment to the universities corporate strategies is more difficult, utilisation of IT resources becomes obscure, and risks, such as security, tend to increase (Waggener & Rickards, 2007).

At the other extreme a centralised IT university will tend to have a central IT department that controls all IT functions, with few staff or other IT resources under the control of the faculties or other departments. A disadvantage of centralisation was a ‘one size fits all’ approach that was not strongly aligned with the needs of the user (Miller, 2002). There is a historic criticism that centralised IT areas in large organisations are incapable of meeting the unique demands of individual users (Waggener & Rickards, 2007). There are, however, some arguments that the decentralised model to support the IT requirements of research in particular was no longer valid and localised needs could be better met by a central IT function (McRobbie, 2006). This is highlighted by the growing need for high performance research computing and large capacity data storage, both areas open to economies of scale (ibid).

Economies of scale are a key benefit of centralisation as well as other economic and resource rationalisation advantages, principally achieved through the reduction in duplication of resources and the development of pools of expertise (Meyer, 2006). The alignment of IT with the universities strategic directions at an institutional level is also one of the most important benefits of centralisation (Waggener & Rickards, 2007).

Decentralisation can lead to fragmentation, where different business units acquire different applications for similar purposes, resulting in compatibility, procurement and support issues (Waggener & Rickards, 2007). Over time it can have an adverse effect on corporate synergies, a loss of economies of scale and bargaining power with vendors is reduced (Meyer, 2006). Decentralised IT units and the decentralisation process itself need to be managed centrally to avoid a chaotic and fragmented IT function (Michalak, Facelli, & Drew, 1999). With such management and planning, many of the disadvantages of decentralised IT areas will be overcome and the benefits offered by decentralisation realised (ibid).

Fragmentation can often lead to decentralised IT areas becoming defacto IT policy creators, thereby circumventing any high level IT governance structure that may be in place (Waggener, 2010). The decentralised, individual technologist is often in a position of dealing with a faculty management that is willing to accept their recommendations for quick solutions (ibid). These solutions are driven by the technical and corporate knowledge of the technologist, which can be insulated and limited. The end result is a siloed and localised delivery model which forms a barrier to the strategic use of IT on an institutional level and by extension to effective IT governance (ibid).

Voloudakis (2010) suggested a framework for universities to use in establishing managed IT service delivery. The framework works within the boundaries created by the universities overall IT strategy and IT governance processes (Voloudakis, 2010). The five steps in the model lead to a managed service delivery structure whether it is through decentralised, centralised, or blended model. Defining the service and the users who will use the service establish the scope of the project: these need to be precise and well defined. Service levels should be defined in consultation with all stakeholders to avoid misunderstandings that may arise over the quality of what is being promised.

A mechanism to negotiate the level of service with the constituent area through user consultation ensures the expectations of the user area are inline with the reality of service levels that can be provided (Gillies & Broadbent, 2005). It also ensures that there is a

common understanding that the level of service and associated risk is directly proportional to the cost of the service (ibid). Such a consultative approach increases transparency of the IT decision making process and the reality of the IT resources available and their respective cost. Greater transparency reduces the motivation for fragmentation (Voloudakis, 2010). Transparency of IT services and IT decision making is a key element in building trust between the IT area and its constituents (Gillies & Broadbent, 2005; Voloudakis, 2010).

A shared services model can overcome the issues of decentralisation while minimising the complications inherent in highly centralised structures (Meyer, 2006). In order for the shared services model to be successful three criteria must be met (Michalak et al., 1999; Meyer, 2006): (i) the IT department must be customer focussed and offer the same responsiveness and level of service that a decentralised IT area would provide; (ii) strategic alignment at the business unit level needs to be achieved. A relationship managers group, which essentially consults with the business unit executive and lower management levels, can be established to identify IT enabling business strategies; and (iii) business unit autonomy needs to be maintained, enabling business unit management to determine, within corporate guidelines, how their budgets are allocated in terms of the IT resources they wish to purchase.

Whatever the degree of decentralisation of the IT function happens to be, IT governance is concerned with the IT function across the entire organisation and should not just be preoccupied with the central IT area (Yanosky & McCredie, 2008). Further, although the degree of centralisation does impact on IT governance structures and processes it is not in itself determinate of governance (Voloudakis, 2010).

The discussion in this section considered the implication of centralisation on the IT governance structure. Largely it has been found that centralisation or decentralisation is not a determinant of IT governance (Voloudakis, 2010). Rather it is an organisational feature which needs to be considered when designing the IT governance structure (ibid). It is the strategic design of the structure based on the mechanisms of IT governance that has the significant impact on the implementation of IT governance. Centralisation affects

the respective influences that the faculty stakeholders versus central stakeholders can exert (Waggener & Rickards, 2007). The demands of these two groups of stakeholders are often contradictory (Waggener, 2010) and IT governance can often be seen as involving a balance of competing interests (Dowse & Lewis, 2009).

The next section discusses the literature regarding user participation in IT governance decision making in universities. Users are important stakeholders and participation by them in the IT governance decision making is a potentially important means for them to exert influence.

2.6.4 User stakeholders defined

Within the university IT environment users can be described as all those who use the IT systems. Such a definition would embrace students, the world at large as well as the employees of the institution. This research focuses on user stakeholders but limits their definition to employees who use the IT related systems in their administrative, teaching and research roles. The importance of employee users participation in IT related developments and management has been recognised in the literature (see for example Bordoloi (2012), Jiang, Klein, Wu, & Liang (2009), Gillies (2008); and Gillies & Broadbent (2005)). The user as a stakeholder is examined in section 2.8.3. Aspects of user participation in IT governance decision making are discussed in the next section.

2.6.5 User participation in IT governance decisions

This section considers user participation in IT governance decision making in universities. Users are the stakeholder group considered in this study. User participation in IT governance decision making is pertinent to ‘what’ influence they may exert and can also be viewed as a mechanism of IT governance.

Strategic IT decisions should not be made, at any level in a tertiary institution, without the participation and ultimate acceptance of affected constituents (Yanosky & McCredie, 2008). It is essential for universities to recognise the importance of meeting the needs of IT users and the contribution of those users to the institutions long term success. Within the university environment there are a wide range of IT users with diverse technology needs, including in teaching and research (Bucher, 2001; Braman, 2006). One suggestion to promote user participation is through a "user empowered" process for IT planning through a user-defined strategic goals document (Grimes, Zingg, & Hanley, 1999, p.4). This process involves not only direct participation by the leadership of the academic areas in the IT governance planning process but responsibility for driving much of the IT planning in terms of strategic teaching directions (Grimes et al., 1999).

Historically there has been some degree of animosity between central IT departments and decentralised business units such as faculties, including allegations that IT departments are harming higher education (Carnevale, 2007). Such a sentiment was famously captured by Wall Street Journal Technology columnist Walt Mossberg in a speech to an educational forum when he stated the IT Departments of large organisations are, "The most regressive and poisonous force in technology today" (Carnevale, 2007, p.1). It is important to the long term health of the institution that such divisions be overcome (Fernandez, 2008).

One example of how this diversity can be addressed was provided by a study of a college where the divide between faculties and the central IT area had been largely overcome (Kuhn et al., 2008). The college was previously described as highly fragmented in terms of IT and was a: "Hotchpotch of disparate and independent systems" (Kuhn et al., 2008, p.1). The fragmentation was resolved through the implementation of five policy steps that included the creation of an environment of process transparency, with users and the technology area working together towards a common goal (Kuhn et al., 2008). The collaborative approach helped to overcome the adversary culture that had evolved between the user faculties and the IT area (ibid)

The literature discussed in this section establishes the importance of user participation and user relationship management in the design of the IT governance structure and as a mechanism in its ongoing operation. The literature review process did not locate any research on the strength and extent of the influence users exert. As such the discussion in this section is used to assist in identifying the gaps in the literature.

The next section considers the application of organisational theory to support the research and to assist in explaining the influence of user stakeholders on the planning and implementation of IT governance

2.7 Organisational theories

The use of organisational theories can support a more rigorous and scholarly research (Schneberger et al., 2009). Stakeholder Theory is used in this research to aid in explaining the actions of the IT governance decision makers. Stakeholder theory is the predominant theory used to explain the organisational relationships with internal and external groups and the need to look beyond purely increasing the return to shareholders (Donaldson & Preston, 1995; Freeman, 1984; Friedman & Miles, 2004). This research focuses specifically on the influence and participation of user stakeholders to benefit their organisational needs through the IT governance planning and implementation process. Stakeholder theory was selected for this research as it has the potential to aid in understanding the phenomenon being researched.

Other organisational theories may also assist in developing a deeper understanding of the research topic but to develop and retain a strong focus within the resources available, only stakeholder theory will be applied.

2.8 Stakeholder theory

Stakeholder theory maintains that traditional enterprises need to consider organisational relationships with internal and external groups beyond the interests of shareholders and the sole aim of maximising profits (Donaldson & Preston, 1995; Freeman, 1984; Friedman & Miles, 2004). A central theme of stakeholder theory holds that management is expected to pursue activities that benefit specific groups or individual stakeholders who are affected by or who can influence the achievement of the organisations objectives (Boesso & Kumar, 2007). IT governance is an activity, at least in part that effects the achievement of the organisations objectives through the provision of systems and other resources to support users in performing their functions. As such stakeholder theory has the potential to assist management in implementing IT governance and its consideration relevant to this research.

2.8.1 Approaches to stakeholder theory

Stakeholder theory has been described as a set of three theories rather than one theory (Donaldson & Preston, 1995). The three constituent theories of stakeholder theory are: (i) instrumental; (ii) normative; and (iii) descriptive (Donaldson & Preston, 1995; Friedman & Miles, 2004). The *instrumental* approach maintains that stakeholder needs are addressed to maintain reputation and achieve long term business aims. Then the *normative* view holds that organisations have an ethical responsibility to attend to stakeholder needs and concerns. Finally, the *descriptive* view of stakeholder theory describes how the organisation actually does behave toward its stakeholders (Donaldson & Preston, 1995).

The research topic includes the consideration of the influences of the employees that use the IT governance related resources in Australian universities. Central to the topic is that stakeholders exert influence on the process of the planning and implementation of the IT

governance and the related mechanisms. As such their influence is related to if and how the university considers their needs. Stakeholder theory holds that these internal stakeholders should be considered and involved in the decision making of the university. This research will consider whether that consideration has been extended to the decision making in the IT governance process.

2.8.2 The salience of stakeholders

Salience is, "The degree to which management gives priority to competing stakeholder claims" (Mitchell, Agle, & Wood, 1997, p. 869). The salience of the stakeholders is important to the research as it is instrumental in determining 'what' influence particular groups of stakeholders exert on the IT governance mechanisms planned and implemented.

The salience of stakeholders can be defined in terms of their power, legitimacy, and urgency as perceived by management (Mitchell et al., 1997). The priority afforded to each stakeholder group is largely dependent on the power, urgency and legitimacy that management perceives the group has accumulated (Boesso & Kumar, 2009).

Power is defined as "a relationship among social actors in which one social actor, A, can get another social actor, B, to do something that B would not otherwise have done" (Pfeffer, 1981, p. 3). Power is transitory; it can be acquired as well as lost. Power in many organisational situations can be dependent on the access to or control over material and financial resources. The possession of prestige, esteem and the ability to confer acceptance are also contributors to power (Etzioni, 1964).

A stakeholder has legitimacy when its involvement or actions in regard to the organisation are desirable or appropriate (Mitchell et al., 1997). Legitimacy in organisations can be temporary and change over time leading to changes of importance of stakeholders to management (Driscoll & Crombie, 2001; Sonpar et al., 2010). Changes in legitimacy can mean a change in management focus on particular stakeholders can

become desirable (Sonpar et al., 2010). For example, a study of Healthcare organisations in the USA found that a focus on cutting costs was in accord with a government directive and highly legitimate but to the detriment of other stakeholders, including employees (Sonpar et al., 2010). As the focus on cutting costs continued other stakeholders lost confidence and began to criticise the standard of healthcare (ibid). The reaction of the stakeholders caused management to change its focus to address the legitimate concerns of the stakeholders. The case illustrates a possible paradox when two stakeholders posses legitimacy but have contradictory needs (ibid).

Different levels of an organisation may interpret legitimacy differently (Mitchell et al., 1997). Legitimacy is a social construct in that it is a perception of management (Santana, 2012). The perception of legitimacy by management should include a perception that the stakeholder has a legitimate claim and pursues its claim with legitimate behaviour (ibid). Phillips (2003) further suggested that organisations need to consider responses to some stakeholders that lack legitimacy but may still take actions that may impact the firm, its employees, or other resources.

Urgency is the degree of immediate attention demanded by a stakeholder (Mitchell et al., 1997). The urgency of a stakeholder was related to two factors: (i) time sensitivity of the claim; and (ii) criticality, which is the importance of the claim to the organisation. Stakeholder power is the extent to which the stakeholder or stakeholder group can impose its will on the management relationship (ibid).

The attributes of stakeholder salience were initially described as independent (Mitchell et al., 1997), but more recent research suggests that they are related (Winkler, 2009). Legitimacy and power were found to contribute to urgency and vice versa (ibid). Urgency was also found to be closely related to the level of involvement of stakeholders in organisational activities (de Bussy, 2008). However, power has been found to play a much greater role than legitimacy in determining the influence of stakeholders (de Bussy & Kelly, 2010).

The dominance of power in establishing the influence of stakeholders can lead to a 'gap' between who should be involved and who is involved (de Bussy & Kelly, 2010). That is between the normative and descriptive views of stakeholder theory. More recent studies have focused on the need to establish and understand stakeholder relationships beyond the use of salience (Myllykangas et al., 2010). One approach to extend stakeholder relationships beyond dependency on salience issues is to use a reactive and proactive approach to stakeholder needs (Smudde & Courtright, 2011). The reactive approach looks back on past activities for analysis and to provide direction. The proactive approach looks forward to future activities to enable opportunities to produce cooperative relationships. The building of stakeholder relationships is then focused on those stakeholders identified as needing to be involved (ibid).

The role that salience plays in IT governance planning and implementation will be determined in this study through interviews of the university and IT executive, as discussed in Chapter Four.

2.8.3 Identifying the stakeholders

The thesis topic centres on the relationship of user stakeholders with the IT governance planning and implementation activities. In order to address the issue it is first necessary to identity the stakeholders. Stakeholders have been defined as groups or individuals that are involved in or are affected by the achievement of the organisations goals (Freeman, 1984).

Much of the literature on stakeholder theory wrestles with the issue of identifying stakeholders who should have an influence on the corporate governance (Donaldson & Preston, 1995; Mitchell et al., 1997). Identification of stakeholders involves the consideration of a wide range and sometimes conflicting, number of complex relationships that change over time (Friedman & Miles, 2002).

Stakeholders can be categorised according to the strength of their role in achieving the objectives of the organisation. Those vital to the organisations success, including customers, employees, and management, are classified as primary stakeholders (Freeman, 1984). The local community, government, and special interest groups, media, and general public can be classified as secondary stakeholders (ibid). However, beyond these generalisations the identification and definition of stakeholders is not well defined and in much of the literature contentious (Stoney & Winstanley, 2001).

Universities in Australia are complex organisations with multiple goals that serve a number of different stakeholders. For the purposes of this research the stakeholders being considered are the employees as users of the IT governance related resources (see Chapter Three). The data collected from the cases studied is used to identify which user stakeholders or groups of stakeholders were identified by the IT governance decision makers. Employees are instrumental in the achievement of the organisations core functions and meet the definition of a legitimate stakeholder (Friedman & Miles, 2002; Mitchell et al., 1997).

The next section reflects on the literature in respect of stakeholder theory and IT governance in universities. In particular previous case studies of universities that considered stakeholder theory are discussed.

2.8.4 Stakeholder theory and IT governance in universities

The involvement of employees and other users in IT management and to a lesser extent IT governance is considered in section 2.6.4. Beyond this there is little guidance in the literature on the involvement of the wider range of stakeholders in IT governance or more specifically in universities in Australia.

The motivation for organisations to subscribe to stakeholder theory may serve the long term survival of the institution or for the common good of society and the stakeholders themselves (Mitchell et al., 1997). Management considering a wide range of stakeholders

will ultimately benefit the enterprise in terms of performance and achievement of its fiduciary goals (Freeman, Wicks, & Parmar, 2004).

There is little research using stakeholder theory to provide an understanding of the selection of IT governance mechanisms in Australian universities which has created a gap in the literature as discussed in the next section.

2.9 Gaps in the literature

This section considers gaps in the literature that will be used to help justify this research and to develop the research questions in section 2.10. It has long been suggested that stakeholder theory should not be limited to corporations but extended to other organisations (Laplume, Sonpar, & Litz, 2008; Phillips, 2003). This research applies stakeholder theory beyond corporations to universities. The literature also pointed to the need for more studies to investigate the relationship between the stakeholders attributes of urgency, power, and legitimacy (Winkler, 2009). This research examines these attributes and their interrelationship in relation to user stakeholders and IT governance planning and implementation.

The value of user involvement in various aspects of IT activities has long been recognised (Terry & Standing, 2004). Many of the IT governance mechanisms suggested in the literature are designed to foster and support user participation in IT governance (Barton, 2003; Gillies & Broadbent, 2005; Guildentops, 2004; Huang et al., 2010; Trubitt & Overholtzer, 2009). Several studies (see for example Gillies & Broadbent, 2005) advocate the importance of user influence and participation in and on the IT decision making in the ongoing IT governance process. It is well established that there must be a planning and implementation of IT governance as IT governance is a planned and formal process that does not occur by accident (Dowse & Lewis, 2009; Weill & Ross, 2004a). Despite the recognition of the importance of more user involvement in IT governance there is a lack of studies that look at the influence of user stakeholders on the planning and implementation of IT governance.

There also appears to be little research that considers how stakeholder theory may assist in understanding the influences on IT governance structures and outcomes. For example the legitimacy paradox of stakeholder theory (Sonpar et al., 2010) and the normative versus descriptive stakeholder theory contradiction (de Bussy & Kelly, 2010), have not been explored in an IT governance context. The consideration of these issues in university IT governance represents another gap in the literature. Addressing this gap may provide a valuable insight into managerial and stakeholder behaviour in planning and implementing IT governance.

While some of the literature, in particular those that are case study based, considered the overall IT governance structures (see for example Blustain & Goldstein, 2004; Spicer & Pirani, 2008,) they did not consider the influences that shaped these structures in any depth. Much of the existing research also tends to be descriptive in nature and does not explore the IT governance structures in the context of stakeholder theory that is considered in this study.

The literature includes several studies that have focused on stakeholder roles in IT governance; these have been largely limited to aspects of IT governance, often with the critical stakeholders inferred. For example, who should make and be accountable for IT decisions (Weill & Ross, 2004b). A deeper understanding of stakeholder relationships beyond salience is needed to analyse strategic change (Myllykangas et al., 2010). There is also a need to relate stakeholder approaches to the performance of the organisation (Mainardes, Alves & Raposo, 2011). This research examines the performance of the case study organisations in terms of IT governance and planning from the perspective of a specific group of stakeholders. There is also little in the literature that addresses IT governance as whole (Wilkin & Chenhall, 2010).

This research will address these gaps in two ways: (i) by developing a theoretical model that maps the influences of user stakeholders on the planning and implementation of the IT governance mechanisms and outcomes: and (ii) by considering the planning and implementation of IT governance in the context of stakeholder theory. Stakeholder theory

is discussed in relation to the research model in Chapter Three. The next section discusses the development of the research questions in light of the review of literature.

2.10 Development of the research questions

The discussion of the literature in this chapter found little research that directly considers user influence on the planning and implementation of IT governance and the associated mechanisms. The review of literature indicates that consideration of users is an important aspect of IT governance structures through such mechanisms as, user relationship management and the transparency of decision making (Agee, 2005; Guildentops, 2004; Gillies, 2008), but does not consider in any depth the influence of users when planning and implementing these mechanisms in an IT governance structure. User involvement in the ongoing operation of many of the mechanisms of IT governance are also promoted in the literature as desirable (Gillies, 2008; Gillies & Broadbent, 2005), but again the role of users in deciding the extent and logistics of involvement is not well covered.

There were a number of clear gaps in the research (see section 2.9) with respect to the influence of user stakeholders on the planning and implementation of the mechanisms of IT governance. Further, there is a gap relating to the application of stakeholder theory to explore if such an approach could provide a deeper understanding of the influence of users on the planning and implementation of IT governance mechanisms. Much of the literature focuses on the outcomes of IT governance, such as alignment, the efficient use of IT resources, and IT risk management. The mechanisms of IT governance are also well discussed and identified as is the involvement of users in the IT governance process.

Hence, the aim or research question 1, of this research is to enhance the understanding of "*How do user stakeholders influence the planning and implementation of the mechanisms of IT governance in Australian universities?"* Understanding of the research topic will be further assisted by the development and confirmation of a conceptual model (see Chapter Three) based on the literature discussed in this chapter.

Three subordinate or secondary research questions will be used to support the contemplation of the primary research question. The secondary research questions are:

2. *What are the typical mechanisms of IT governance implemented within Australian universities?*
3. *To what extent do user stakeholders participate in the IT governance mechanisms in Australian universities?*
4. *Do user stakeholder attitudes and perception of IT governance influence the IT governance mechanisms that have been implemented in Australian universities?*

The first of the subordinate research questions establishes what is currently or planned to be in place in terms of IT governance to establish if: (i) IT governance has been implemented. That is to confirm if the research is viable in a particular university that is participating in the study; and (ii) to determine the mechanisms of IT governance that are present to identify and map the IT governance process which is the unit of analysis in this research.

The second of the subordinate research questions will be addressed to identify the extent that user stakeholders are involved in the IT governance process, which may be related to the degree of influence the users can exert, as is referred to in the primary research question. The final subordinate research question will specifically address the impact of user attitude and perceptions on the influence the user stakeholders may exert, to provide a richer understanding of the influence of the various user stakeholders.

The themes identified from the literature are used as the basis for the qualitative case study interviews and the quantitative survey of users undertaken in phase four of this research. Specifically, the literature themes are used in three ways: (i) to develop the interview protocols; (ii) to develop the survey instrument; and (iii) to develop the themes for analysis of the qualitative data. The research methodology, including the themes used, is discussed in detail in Chapter Four. The next section establishes the importance of undertaking this research.

2.11 Importance of the research being undertaken

The advantages of stakeholder participation in IT governance are the subject of much research (see for example Fernandez (2008), Gillies & Broadbent (2005) and Yanosky & McCredie (2008), discussed in section 2.6). Little of the research explores the influence stakeholder groups exert on the planning and implementation of IT governance and its associated mechanisms. This study addresses that gap in the research and in doing so provides a deeper understanding of IT governance design and implementation. A deeper understanding through the application of stakeholder theory is important in permitting a better design and implementation of appropriate mechanisms to achieve IT governance in complex organisations, such as universities.

Through the application of stakeholder theory this study will promote a better understanding of the advantages and methods of meeting the diverse needs of user stakeholder groups. Such a better understanding will assist in the improved design of IT governance structures and will assist organisations in achieving their IT governance objectives. The research will also serve to advance the application of stakeholder theory to a wider range of organisations and to further explore the relationship between stakeholder attributes. The importance of additional research in both areas has been advocated (See for example in the case of a wider range of organisations Laplume et al. (2008), Phillips (2003), and in the case of stakeholder relationships Winkler (2009)).

This research will contribute to the understanding of the role of user stakeholders in IT governance planning and implementation in Australian universities. In addition it will provide practical guidance to IT governance decision makers on the advantages and challenges of a stakeholder approach. In particular the development of a research model will encapsulate the findings of this research.

2.12 Chapter summary

The literature review focuses on identifying the gaps in the literature in the areas related to the research topic. Essentially this involves exploring three issues; (i) the identification of IT governance mechanisms and the core outcomes of IT governance; (ii) the consideration of the unique characteristics and environment, generally and specifically related to IT governance, of universities in Australia; and (iii) the use of stakeholder theory to provide a deeper understanding of the strategic management and selection of the IT governance mechanisms.

As discussed in sections 2.3 to 2.6, there is extensive literature to assist in understanding IT governance as well as identifying the individual mechanisms that can form the governance structures. Table 2.2 lists some of the mechanisms of IT governance identified from the literature discussed in sections 2.3 to 2.6.

No.	General IT governance mechanism	References include
1	Coordinated group of mechanisms & Holistic IT governance approach.	De Haes & Van Grembergen (2009); Nfuka & Rusu (2011).
2	Transparency of IT decision making.	Guildentops (2004); Gillies (2008).
3	User and central IT relationship management.	Trubitt & Overholtzer (2009); Agee (2005).
4	CIO appointed and at an executive level.	De Haes & Van Grembergen (2009); Banker et al. (2011); Gillies & Broadbent (2005). Nfuka & Rusu (2011).
5	IT steering committee.	De Haes & Van Grembergen (2009).
6	Other user relationship support mechanisms.	Kuhn et al. (2008).
7	User involvement.	Gillies (2008); Gillies & Broadbent (2005).
8	High level executive support & direction for IT governance.	Barton (2003); Nfuka & Rusu (2011); Weill & Ross (2004b).

Table 2.1: Summary of IT governance mechanisms from the literature.

Many mechanisms can contribute to good IT governance but no single mechanism is determinant of IT governance (Dowse & Lewis, 2009; Weill & Ross, 2004a). It is essential to have a formal, planned and coordinated IT governance structure (De Haes & Van Grembergen, 2009; Nfuka & Rusu, 2011).

In addition three core outcomes of IT governance were identified from the literature: (i) alignment of IT governance strategies with business strategies (Luftman & Brier, 1999; Willson & Pollard, 2009); (ii) efficient use of IT related resources (Gheorge, 2010; Weill & Ross, 2004b; Willson & Pollard, 2009); and (iii) management of IT related risk (Gheorghe, 2010; Gheorghe, 2011; Willson & Pollard, 2009).

The discussion in section 2.6 outlined the literature in respect of university governance generally and to IT governance in universities specifically. From this it is clear that the economic environment of universities generally has changed dramatically in the last two decades (Shattock, 2012), including universities in Australia (Marginson & Considine, 2000). These changes in the unique structure, objectives, and environment of universities in Australia have placed a great deal of pressure on the traditional governance structures and ultimately IT governance structures of these institutions. Literature of research into IT governance at universities was also discussed to contribute to establishing the gap in the literature and to understand the environment in which the study will be conducted.

Section 2.8 discussed the literature in respect of stakeholder theory. Stakeholders are not well defined (Fontaine, Haarman, & Schmid, 2006; Stoney & Winstanley, 2001), but the literature consistently includes employees as key stakeholders (Freeman, 1984). The stakeholder salience approach uses the legitimacy, power and urgency of stakeholder groups to establish their influence (Boesso & Kumar, 2009; Mitchell et al., 1997). The application of stakeholder theory to the research may provide a deeper understanding of the motivations driving the implementation of IT governance mechanisms. The discussion of the literature in section 2.8 also contributes to identifying the gaps in the literature.

The most prominent gap is that little of the research in the literature addresses the influence of major stakeholders on the IT governance planning and implementation. In addition few of the studies in IT governance attempt to apply any form of stakeholder theory to explain these influences on the IT governance structure and outcomes. This research will address the gaps in the literature by developing a theoretical model to illustrate the influence of user stakeholders on IT governance and by using stakeholder theory to help understand the strategic impact of these influences.

The literature discussed in this chapter is related to the theoretical model of the research in Chapter Three and to the research approach and design in Chapter Four. The next chapter, Chapter Three, discusses the development of the research model.

Chapter 3: Theoretical Model

3.1 Introduction

This chapter analyses and explains the theoretical research model developed to address the research questions introduced in Chapter Two. The research model is derived from the literature but also addresses the gaps that were identified and discussed. The research model maps the influence of user stakeholders on the planning and implementation of IT governance structures, in order to gain greater participation in the mechanisms of IT governance. The motivation for users to exert their influence may be related to the outcomes they expect to experience from IT governance. In turn they may use their participation role to secure better outcomes. In line with the thesis topic, the research suggests that the influences of the user stakeholders, as illustrated in the research model, should be taken into consideration in the planning and implementation of IT governance. This suggestion is consistent with the literature on stakeholder theory and IT governance, as is discussed in this chapter.

Section 3.2 introduces the research model and distinguishes it from other models identified in the literature. Section 3.3 provides an overview of the model, while section 3.3.1 to section 3.3.7 discusses the individual components and relationships described in the model. Section 3.4 justifies the selection of stakeholder theory to explain the process illustrated in the research model. The Chapter concludes with a summary in section 3.5.

3.2 Research model

The theoretical research model, shown in Figure 3.1 below, has been proposed to address the research questions that have been developed in Chapter Two. As such the model represents the influence of user stakeholders on the planning and implementation of the IT governance structure. The model is drawn from the literature and is confirmed and

validated by this research. Figure 3.1 also displays the research questions that apply to the various aspects of the research model. The research model components are fully described in section 3.3. Stakeholder power, urgency and legitimacy are discussed in section 2.8.2.

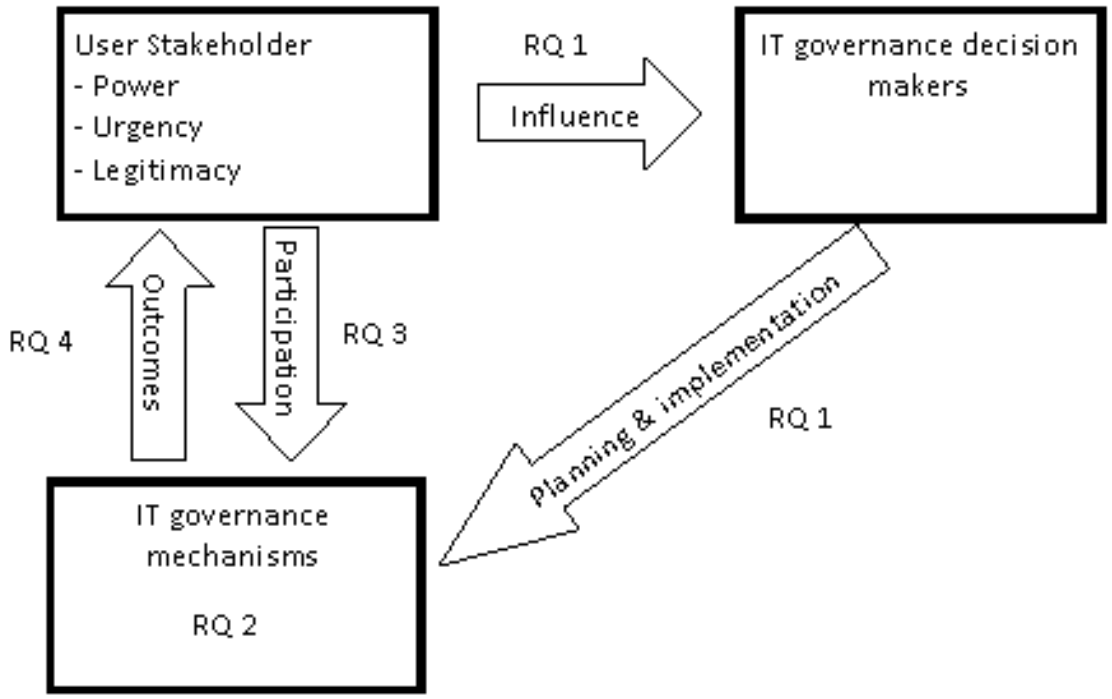


Figure 3.1: Theoretical model of the influence of user stakeholders on the planning and implementation of IT governance in Australian universities.

The research model does not suggest that the only influence or consideration on the IT governance decision makers comes from user stakeholders, but represents one aspect of what is obviously a complex process. The model is based on the literature but also addresses several gaps. These gaps are discussed in section 3.3. Addressing the gaps in the literature falls into two broad categories: (i) where the literature has considered an issue in other contexts and this research extends it to IT governance situations in universities; and (ii) where the literature has not considered the issue and the research adds a unique contribution to the literature.

Several models of various aspects of IT governance have been put forward in the literature. Some of these consider the role of organisational leadership in the governance process. Two examples are: (i) the Board IT Governance process model developed by Gillies and Broadbent (2005), which deals with the influential role played by the board of directors in a structured IT governance process; and (ii) the role of the IT steering committee in the governance process model as developed by Barton (2003). These leadership models typically consider pockets of influence from leadership sources and not from user stakeholders and their influence on the planning and implementation of IT governance from a stakeholder theory perspective.

Other models focus on the mechanisms themselves, such as the decision rights explored by Weill and Ross (2004b) and the Foundation Activities in Business Management of IT model as proposed by Barton (2003). The principal purpose of these models is to identify and promote processes and mechanisms that will contribute to good IT governance, either singularly or in conjunction with related mechanisms. While these models clearly expound the connection of these mechanisms to IT governance they do not explore in any depth the effect or source of influences on the planning and implementation of IT governance.

A number of studies and models address IT governance from a variety of different contexts. Gillies and Broadbent (2005) look at improving business and IT goal alignment through their model of Integration of IT plans into Business Strategy. CobiT documents a number of models to measure and improve maturity of IT governance in organisations (ISACA IT Governance Institute, 2003). Voloudakis (2010) suggested a model to assist organisations in defining their structures of IT service delivery. Models, such as the shared services model by Meyer (2006), are designed to overcome particular organisational characteristics. The model proposed by Meyer addressed the IT issues unique to decentralised organisations.

Grimes et al. (1999) considered user involvement in the IT governance process through a user empowered participation in IT planning and goal setting. The importance of user

relationships in the IT governance process in a university environment was further explored by Fernandez (2008), Yanosky and McCredie (2008), and Kuhn et al. (2008). These studies focused on overcoming the divide sometimes bordering on animosity that can emerge between faculty users and the central IT area with adverse consequences for the IT governance process. While the studies contemplated aspects of the user relationship from the perspective of relationship management, they did not explore the influences on the planning and implementation of IT governance from a stakeholder theory perspective.

The research model proposed through this study can be distinguished from other models in a number of distinct areas: (i) it explores the influence of user stakeholders on the IT governance process that is planned and implemented; (ii) the motivation for the user stakeholders to attempt to exert their influence is described in terms of the expected outcomes of the IT governance process; (iii) the practical impact these major influences have on the IT governance mechanisms that are planned and put in place and the way they function is considered; and (iv) these often disparately treated areas are linked together through the relationships that are demonstrated in the research model.

There are several identified gaps in the literature (see section 2.9), particularly in respect of the application of stakeholder theory (Laplume et al., 2008; Phillips, 2003; Winkler, 2009) that the model addresses. Although clearly distinguishable from models and associated research found in prior studies, the proposed research model considers many of the key aspects of these studies and expands on their interaction and application in a practical context. The components and relationships that constitute the theoretical research model are developed from the ambit of IT governance studies and authorative sources discussed in the review of literature. The model components and relationships are discussed in detail in section 3.3.

3.3 Research model components and relationships

The research model in Figure 3.1 consists of four relationships which interlink the three components. The relationships are indicated by arrows and the components are represented by rectangles. The relationships demonstrated in the model are: (i) user influence on the IT governance decision makers; (ii) the ultimate affect of the user influence on the governance process planned and implemented by the IT governance decision makers; (iii) the motivational impact on the user stakeholders that is created by the expected outcomes of IT governance that drives the users desire to influence the IT governance process; and (iv) the degree of participation of particular users in the IT governance process as a result of the influence they have exercised.

The three components of the proposed model are: (i) user stakeholders, including their attributes that determine the salience or degree of influence they command; (ii) the IT governance decision makers, who determine the structures and mechanisms of IT governance that will be implemented; and (iii) the actual IT governance process that is planned and implemented.

This model reflects the relationships stated in the research questions and models the thesis topic of this research. The model components and relationships reflect what the literature supports as an effective representation of how the IT governance process can operate at the strategic level in Australian universities. This research investigates whether the research model replicates the process of user stakeholder influence on the IT governance planning and implementation in practice.

Figure 3.1 also describes the application of the research questions to the research model. Research question 1, "*What influences do user stakeholders have on the planning and implementation of IT governance in Australian universities?*" relates to the following components and relationships of the research model: (i) the user stakeholder component; (ii) the influence relationship; (iii) the IT governance decision makers component; and (iv) the planning and implementation relationship. Research question 2, "*What are the*

mechanisms of IT governance implemented within Australian universities?" specifically relates to the IT governance component of the research model. Research question 3, "*Is the extent of a user stakeholder's participation in the IT governance process in Australian universities affected by that stakeholders influence?*" refers to the participation relationship shown in the model. Research question 4, "*Do the expected outcomes of IT governance motivate user stakeholders to influence the mechanisms of IT governance design and implementation?*" relates to the outcomes relationship shown in the research model. The user stakeholder component of the model is discussed first, followed by discussion of each of the relationships and other components in clockwise order of the model.

3.3.1 User stakeholder component of the research model

User stakeholders are employees who interact with, and are reliant on the IT governance process to assist them in achieving their work objectives. The reasoning for the selection of employee users for the purposes of the research is discussed in Chapter Four. Employees are essential to the achievement of the organisations core objectives and meet the definition of a legitimate stakeholder (Friedman & Miles, 2002; Mitchell et al., 1997).

As legitimate stakeholders, stakeholder theory maintains that employees should be considered in the decision making process (Donaldson & Preston, 1995; Freeman, 1984; Friedman & Miles, 2004). Management should ensure that decision making and other activities are for the benefit of those who contribute to the organisations goals (Boesso & Kumar, 2007), such as employees. By extension the literature suggests that employee user stakeholders should be considered in the IT governance decision making, such as planning and implementation. As discussed in Chapter Two however, the literature does not specifically consider stakeholder theory in relation to IT governance decision making.

All stakeholders possess salience which determines the degree of influence they command over the decision makers (Boesso & Kumar, 2009; Mitchell et al., 1997). Salience arises from the stakeholder's legitimacy, urgency, and power as perceived by the

decision makers (ibid). The user stakeholder component of the research model includes the user stakeholder attributes of legitimacy, urgency, and power, as they are expected to determine the influence the users can exert. Influence as it relates to the research model is discussed in the next section.

3.3.2 Influence of user stakeholders relationship in the research model

The relationship between the user stakeholders and the IT governance decision makers is described in the research model as 'influence', indicated by the arrow connecting the user stakeholder component and the IT governance decision maker's component.

Mitchell et al. (1997) found the degree of influence a stakeholder will have depends on their power, legitimacy, and urgency as perceived by management. Legitimacy is when the involvement of the stakeholder is seen as desirable or appropriate by the decision makers (Mitchell et al., 1997). Urgency is the degree of immediate attention demanded by the stakeholder, and the power of the stakeholder is the extent to which it can influence the management relationship (ibid).

Rau (2004) supported the need to involve all stakeholders in IT governance. Yanosky and McCredie (2008) stressed the need for user participation in strategic IT decision making and acceptance of such decisions as being paramount in universities to ensure the effectiveness of IT initiatives. Such participation was also seen as important in promoting transparency in IT decision making and discouraging dysfunctional user and faculty behaviour (Kuhn et al., 2008; Waggener & Rickards, 2007). Fardal (2007) further argued that the user perspective in IT strategy was important in establishing alignment of IT users and management to achieve improved IT strategy, particular in IT project initiatives.

A number of IT governance case studies conducted within individual universities and other literature have indicated an adversarial culture had developed between users and faculty areas and the central IT areas over time (Kuhn et al., 2008; Carnevale, 2007;

Fernandez 2008). Fernandez (2008) emphasised the need to overcome such attitudes and perceptions in maintaining a healthy organisational IT culture and consequently contributing to an effective university wide IT governance function. The user influence relationship shown in the research model represents the relationship between the user stakeholders and the IT governance decision makers. The strength of the influence relationship is determined by the user stakeholder's legitimacy, urgency, and power as discussed in section 3.3.1 above.

3.3.3 IT governance decision makers component of the research model

The IT governance decision makers are those who have overall responsibility for the planning and implementation of IT governance across the university. The literature strongly supports the appointment of a CIO to oversee the IT governance function as an important mechanism of IT governance (De Haes & Van Grembergen, 2009). IT governance should have high level executive support and direction (Barton, 2003; Nfuka & Rusu, 2011). It is likely then, that the CIO and representatives from the business executive will be involved in IT governance decision making.

There have been dramatic changes in the economic and political environment of universities and this has had an impact on the corporate decision making structures (Marginson & Considine, 2000; Shattock, 2012). Such changes are also expected to impact on the IT governance decision making, although this has not been explored in the literature. Issues such as centralisation of decision making and the degree of power retained by the faculty user groups have been prominent in the literature on universities (Marginson & Considine, 2000; Rytmeister, 2009), including in IT related areas (Voloudakis, 2010; Waggener, 2010).

Previous studies of IT governance in universities have indicated a tendency to evolve decentralised IT structures to better service the needs of research and teaching constituents (Voloudakis, 2010; Waggener, 2010). Other studies have indicated that centralised IT structures offer many advantages in terms of institutional level strategic IT

alignment and economies in use of IT resources (Meyer, 2006; Waggener & Rickards, 2007). Decentralised structures run the risk of fragmentation and other dysfunctional user behaviour that will impact on IT governance outcomes (Voloudakis, 2010; Waggener & Rickards, 2007). Michalak et al. (1999) argued that decentralised IT areas and any move to IT decentralisation would need to be coordinated centrally to avoid damaging IT governance across the institution. Yanosky and McCredie (2008) maintained that IT governance needed to be concerned with IT across the entire organisation and not just preoccupied with the central IT area.

The IT governance decision making component of the research model represents those that make the IT governance planning and implementation decisions and also considers the pertinent issues in respect of their decision making. The impact of the influence of user stakeholders on the IT governance decision makers can then be better identified and understood.

3.3.4 Planning and implementation of the IT governance process

The planning and implementation relationship in the research model is represented by an arrow connecting the IT governance decision maker's component to the IT governance structure component. The planning and implementation relationship describes the determination of the IT governance structure by the IT governance decision makers. The IT governance structure is the outcome of the IT governance decision maker's deliberations and includes the impact of any user influence.

It is expected that the universities that have implemented IT governance will have done so based on the mechanisms of IT governance identified in the literature. Many of the IT governance mechanisms discussed relate to user interaction or involvement in the IT governance process. For example, transparency of IT decision making (Guildentops, 2004; Gillies, 2008), IT steering committee (De Haes & Van Grembergen, 2009), user relationship support mechanisms (Agee, 2005), other user relationship support mechanisms (Kuhn et al., 2008), and user involvement (Gillies, 2008; Gillies &

Broadbent, 2005). Any influence of users on the IT governance decision makers and ultimately the IT governance mechanisms is expected to relate to these mechanisms that incorporate some form of user involvement. The influence of users on the mechanisms of IT governance are an aspect of the model that is not specifically covered in the literature and represents a gap in the literature that this study will address, as discussed in Chapter Two.

3.3.5 The IT governance structure component of the research model

The IT governance structure component of the research model represents the actual mechanisms that have been planned and implemented by the IT governance decision makers. The IT governance structure is based on the mechanisms of IT governance, as discussed in section 3.3.3 and section 3.3.4. It is in the mechanisms that the influence that users may have exerted will manifest itself, particularly in the degree of their participation.

The IT governance mechanisms are the components that together form the governance process. Their collective comprehensiveness, effectiveness, and functionality determine whether the organisation has implemented IT governance. The types of mechanisms implemented and the level of participation of users are expected to be influenced by the user or user group's degree of legitimacy, urgency, and power. Typical examples of mechanisms of IT governance are discussed in Chapter Two.

The key mechanisms of IT governance employed in any organisation will vary according to the particular characteristics and needs of the organisation (Dowse & Lewis, 2009; Weill & Ross, 2004a). Although not specifically applied to universities in the literature it is expected that there will not be one particular structure or group of mechanisms universally suited for IT governance in universities. Studies related to universities (see for example; Bhattacharjya & Chang (2007), Pirani, J., & Salaway. (2008), and Kuhn et al. (2008)) have found similar but differing mechanisms in place that support the conclusion that no one group of mechanisms will suit all universities. For this reason the proposed

model does not attempt to stipulate or describe any particular structure but merely suggests a coherent and comprehensive group of governance mechanisms need to be in place for IT governance to occur (Dowse & Lewis, 2009; Weill & Ross, 2004a). That is, IT governance in universities will not happen by accident but will be the result of a planned implementation as occurs in other organisations.

The IT governance structure in place will provide or contribute to a set of outcomes (Hunton et al., 2004; Weill & Ross, 2004a; Musson & Jordan, 2005) that will impact on the user stakeholders that interact with and rely on IT governance in the performance of their organisational responsibilities. The relationship of the IT governance structure to the user stakeholders is discussed in the next section.

3.3.6 Influence of the expected outcomes of IT governance

The relationship in the research model described as the expected outcomes connects the IT governance structure component with the user stakeholder component. The expected outcomes relationship represents the importance of the IT governance process to the user stakeholders. As such it attempts to provide an explanation of why the user stakeholders wish to exert an influence over the IT governance planning and implementation process.

As discussed in Chapter Two, there are three outcomes of IT governance identified from the literature, these are: (i) alignment of business strategies with IT strategies at various levels in the organisation (Luftman & Brier, 1999; Willson & Pollard, 2009); (ii) efficient use of IT resources across the organisation (Gheorghe, 2010; Weill & Ross, 2004b; Willson & Pollard, 2009); and (iii) IT risk management (Gheorghe, 2010; Gheorghe, 2011; Willson & Pollard, 2009).

The most significant of the outcomes for user stakeholders has been found in the literature to be alignment (Pirani & Yanosky, 2005). The three outcomes are represented within the expected outcomes relationship in the research model. The implication being that the user stakeholders will attempt to obtain the best possible outcomes for themselves

through influencing the IT governance planning and implementation process to maximise their participation in the ongoing IT governance process. The motivation for user stakeholder influence on the IT governance planning and implementation process is unexplored in the literature and this portion of the research model is unique in addressing the gap.

3.3.7 Participation relationship in the research model

Participation of users in the IT governance process planned and implemented is represented in the research model by the arrow running from the user stakeholder component to the IT governance structure component. The participation relationship indicates the extent of the various users and groups of user stakeholders in the IT governance process.

The participation relationship suggests that user stakeholders will attempt to maximise their participation in the IT governance process in order to secure the best possible outcomes for their respective needs. The outcomes of the IT governance process are discussed in section 3.3.6 and in Chapter Two. Whether user stakeholder groups will attempt to maximise their involvement in the IT governance process and their motivations for doing so are largely unexplored in the literature and this research will be unique in considering the issue. Participation by users in itself is well covered in the literature and has been described as desirable (Agee, 2005; Yanosky & McCredie, 2008), particularly to improve alignment with user needs (Trubitt & Overholtzer, 2009).

User and other stakeholder participation is common (Pirani & Yanosky, 2005). Faculty level groups of user stakeholders in universities can have a less than desirable relationship with the central IT area that needs to be improved to better support IT governance (Fernandez, 2008). Improvement is often through developing user participation in the IT governance process (Kuhn et al., 2008). Efforts to overcome or avoid animosity can often lead to an increase in the opportunities for users to be involved

in IT governance through such initiatives as collaboration with users and representation on oversight committees (Kuhn et al., 2008).

The research model participation relationship seeks to demonstrate that stakeholders are encouraged to participate in the IT governance process. Further the research model suggests that user stakeholders are motivated to maximise their involvement and will seek to exert influence so as to create increased participation at the planning and implementation stage.

3.4 Justification for selection of stakeholder theory

This section considers and justifies the use of stakeholder theory to support and confirm the research model discussed in this chapter. The use of theories to support the research adds to its rigor and scholarly impact (Schneberger et al., 2009). The research model addresses a number of gaps in the literature. One of these is the application of stakeholder theory to explain the dynamics of the IT governance planning and implementation process.

The research model focuses on the influence of user stakeholders on the IT governance mechanisms. Stakeholder theory was selected as it helps to explain organisational relationships with a particular group of internal stakeholders and strongly aligns with the thesis topic that specifically refers to the influence of user stakeholders. The research model includes consideration of the influence of user stakeholders. The model considers whether the user stakeholders exert influence on the planning and implementation of the IT governance structure that is put in place to support and ensure their operational and strategic IT needs are met. As such their influence is related to how the university considers their needs. The stakeholder theory holds that these internal stakeholders should be considered in the decision making of the university (Donaldson & Preston, 1995; Friedman & Miles, 2004). This research will consider whether that consideration has been extended to decision making in the IT governance planning and implementation process.

Other theories may also provide valuable insight in the IT governance planning and implementation process, but to develop and retain a strong focus the selection of one organisational theory is considered appropriate. Stakeholder theory is discussed in relation to the literature in Chapter Two and in relation to the research model in section 3.3.

3.5 Chapter summary

This chapter describes the development of the research model based on the literature discussed in Chapter Two and the gaps in the literature that were identified in that chapter. The research model illustrates the various components and relationships by which the literature suggests user stakeholders may influence the planning and implementation of IT governance in Australian public universities. There are several gaps in the literature that the research model also addresses. These include the application of stakeholder theory to help explain the IT governance planning and implementation process. Figure 3.1 illustrates the application of the research questions to the research model components and relationships.

The research model consists of three components and four relationships. Together these demonstrate the possible influence of user stakeholders on the planning and implementation of IT governance in organisations. The model suggests that user stakeholders are motivated to exert influence to gain an increased participation level in the IT governance process in order to achieve the best possible outcomes to support the achievement of their organisational objectives.

Chapter Four will consider specifics of the research design which will be used to study the research model developed in this chapter and confirm it in Australian universities. The research findings in relation to the research questions and proposed model are discussed in Chapters Five to Nine.

Chapter 4: Research Methodology

4.1 Introduction

This chapter describes the research methodology employed in this research, including establishing and discussing both the theoretical and practical aspects of the study. An outline of the methods used in the research is provided in section 4.2. Section 4.3 then considers the selection of the research method, followed by a discussion of the case study methodology and data analysis techniques used in section 4.5. Research validity and reliability is then detailed in section 4.6. Ethical considerations are contained in section 4.7 with a summary of the chapter in section 4.8.

4.2 Research Methods

The choice of research approach is dependent on the researcher's experience, beliefs, and understanding, as well as the nature of the questions being asked and the context of the study itself (Crossan, 2003). Creswell (2003) suggests three questions central to research design:

1. What knowledge claims are being made by the researcher?
2. What strategies of inquiry will support the procedures?
3. What methods of data collection and analysis will be used?

These components of research can be combined in different ways to form different approaches to inquiry (Creswell, 1998, 2003). Paradigms in social research determine what the researcher will look for and how they will interpret what they discover (Babbie, 2010). A paradigm has been defined as a framework which serves as a pattern or model and more definitively by Babbie (2010, p.7), as a collection of "assumptions, concepts, values and practices that constitute a way of viewing reality".

A paradigm may be implicit in research in that the researcher does not explicitly specify a framework within which to view and analyse a particular research question. Such an approach will deny the researcher an opportunity for a better contextual understanding of both the problem subject to research and the responses of those participating in the research (Babbie, 2010). In addition Babbie (2010) felt that the researcher may profit from the ability to 'step outside' the adopted paradigm to view issues from an innovative approach. Cresswell (2003) saw the benefit of adopting a paradigm or knowledge claim as enabling the researcher to start research with assumptions about their approach to how and what they will learn.

An examination of the literature discussing paradigms and research approaches reveals a seemingly endless array of philosophies and associated variants. For example, Babbie (2010) identified many paradigms in relation to social science research and the study of social behaviour including, positivism, social Darwinism, conflict paradigm, and ethnomethodolgy. Myers (1997) more general treatise suggests that the major philosophical stances behind knowledge claims can be considered in the three broad categories of positivist, interpretive, and critical.

Critical social theory views social reality as the product of people and adopts the principle that people can change their social and economic situation within various organisational constraints (Myers & Klein, 2011). Critical research emphasizes the conflicts and contradictions of contemporary society seeking to socially critique issues, bringing to light the restraints of the status quo (Cecez-Kecmanovic, 2005). Critical theory seeks human emancipation through explaining and transforming the circumstances that restrain them (Gephart, 1999).

Interpretivism aims to discover an underlying meaning in its attempt to interpret or make sense of a phenomenon. It concentrates on language and the meaning of actions to explain the event under investigation (Klein & Myers, 1999). Interpretivists traditionally seek to explore, describe, and understand the world from the viewpoint of the research

participants rather than the positivist approach to uncover facts and truths (Gephart, 1999).

Positivism represents a paradigm that holds that positive knowledge is founded on the properties and relationships of natural phenomena and is capable of empirical verification (Babbie, 2010). Historically, positivism originated as a social theory that was used to describe the application of science to study society in place of metaphysical or theological speculation. The term has evolved to now describe research having the attributes of objectivity that can be defined by measurable properties independent of the researcher or research instruments employed.

Data gathered for positivist research is not subject to the meaning-endowing processes of people, whether they be the subject of the study or the researchers themselves. This implies the positivist data attempts to describe social issues empirically, a concept supported by Creswell (2003) in describing positivism as the view of shaping knowledge through data, evidence, and rational considerations. In practice the common instruments used to gather data in a positivist study are based on respondent completed measures such as through a survey or through the researcher recording empirical observations (Creswell, 2003). The distinction between quantitative and qualitative methods has become less clear and can usually be more accurately described as a continuum (Creswell, 2003). As such, studies can be categorised as tending to be more quantitative or qualitative in nature. Qualitative research based on case studies can be positivist, interpretive, or critical (Myers, 1997).

A case study methodology is ideal when an in-depth, holistic approach is needed as it is designed to employ multiple sources of data to extract details from the perspective of the case study subjects (Tellis, 1997). Miles and Huberman (1994, p.25) defined a case as "… as a phenomenon of some sort occurring in a bounded context. The case is in effect your unit of analysis".

Tellis (1997) considered case studies as a means of exploring not only the individual participant's viewpoint but also various groupings of participants and the various

interactions between them. Case studies are designed to focus on a particular activity or unit of analysis in-depth and not the entire organisation. They are subsequently useful in examining and understanding a particular situation from a standpoint of contextual reality (Baharein, 2008). Yin (1994) considered that case studies are particularly suited to exploring contemporary events. Baharein (2008) described an advantage of case studies as their suitability to capturing emergent and rapidly changing phenomenon in dynamic organisations.

Qualitative research aims for a complete, detailed description of the research subject enabling individual interpretation of events through the collection of data rich in contextual meaning (Neill, 2007; Miles & Huberman, 1994). This recognises that human behaviour is influenced by the environment in which it occurs. Qualitative research can investigate and describe the processes and underlying meaning of current events through techniques such as in-depth interviews (Miles & Huberman, 1994).

Quantitative research permits the classification of various features and the development of statistical based models to explain what has been observed (Neill, 2007). Quantitative researchers typically use questionnaires and related techniques to collect data that can be represented in numerical terms (ibid). Miles and Huberman (1994) suggest that linkages between qualitative and quantitative methods in a study will mutually strengthen the findings from both approaches. Johnson and Onwuegbuzie (2004) hold that mixed methods approach embracing a blend of qualitative and quantitative elements will draw from the strengths and mitigate the weaknesses of both, whether in a single research study or across studies.

4.3 Selection of Research Method

The research methodology that was used in this study was predominately positivist in approach as it sought to establish a relationship between the various IT governance planning and implementation processes used in different universities. The existence of a strategic level relationship may validate the research model that has been proposed. The

relationship between the data collected in the research can be readily and sufficiently analysed with predetermined rules. The definitions of IT governance, outcomes, and associated mechanisms as well as user stakeholders are predefined and the definitions are not dependent on the specific organisational or social context in which they are found. As such this study is not consistent with the interpretivist approach that holds that all versions of the truth are dependent on the researcher's individual understanding and perception of the world.

This research does not take a critical theory approach as it did not seek to explore the political aspects of IT governance structures or to socially critique the phenomenon under investigation. While the involvement of stakeholders in the IT governance process is explored, there is no attempt to justify or change the social environment in which the governance processes operate.

Data for the research was gathered through a case study approach. Case studies were selected for a number of reasons: (i) Case studies identify a phenomenon in the context of an organisation (Miles & Huberman, 1994). The IT governance process is a phenomenon occurring within the context of the organisation and is the unit of analysis; (ii) Case studies allow the use of multiple sources of data (Tellis, 1997). Determining the structure of the IT governance in place in the organisation necessitates the use of multiple sources of data from the perspective of various stakeholders; (iii) Case studies permit the exploration of contemporary events (Yin, 1994). IT governance is a contemporary event that was explored through this research; and (iv) Dynamic organisations with emergent and rapidly evolving phenomenon are particularly suitable to a case study approach (Baharein, 2008). The universities being examined are dynamic organisations with IT governance being an emergent and rapidly evolving phenomenon.

The principal method of data collection within the case studies was through the interviewing of key stakeholders in the IT governance process. Interviews permitted the exploration of characteristics of IT governance unique to the individual case studies by the inclusion of open ended questions and questions adapted to the individual

organisation. The interview protocols are discussed in more detail in section 4.5.7 of this chapter.

An explanatory survey was used to gather data from IT faculty level users to ascertain the profiles, perceptions, attitudes, and the degree of participation of such users in the IT governance process. A survey involving quantitative analysis was used as it enables a wide range and a large number of users to participate in the study with a minimal investment in development, distribution, and analysis (Glasow, 2005). Explanatory surveys typically do not define dependencies between data but rather establish that relationships exist (Williamson, 2000) which is consistent with the premise of this research.

Figure 4.1 shows the research methodology as a flowchart in a similar format as proposed by Gable (1994). The stages of the study are illustrated as rounded boxes with information represented as square boxes. Figure 4.1 relates each stage to the corresponding phase of the research. The five phases of the research are: (i) defining of the research objectives and questions; (ii) development of the preliminary research model; (iii) conducting of the pilot study and development of the interview and survey protocols; (iv) conduct of the multiple case studies and survey culminating in validation of the research model; and (v) interpretation of the findings and development of conclusions.

This research sought to understand and interpret data from a number of divergent sources pertaining to a particular current activity in an area that is rapidly developing within the dynamic industry of tertiary education. Consequently a mixed methods approach was selected including in the major part a case study methodology.

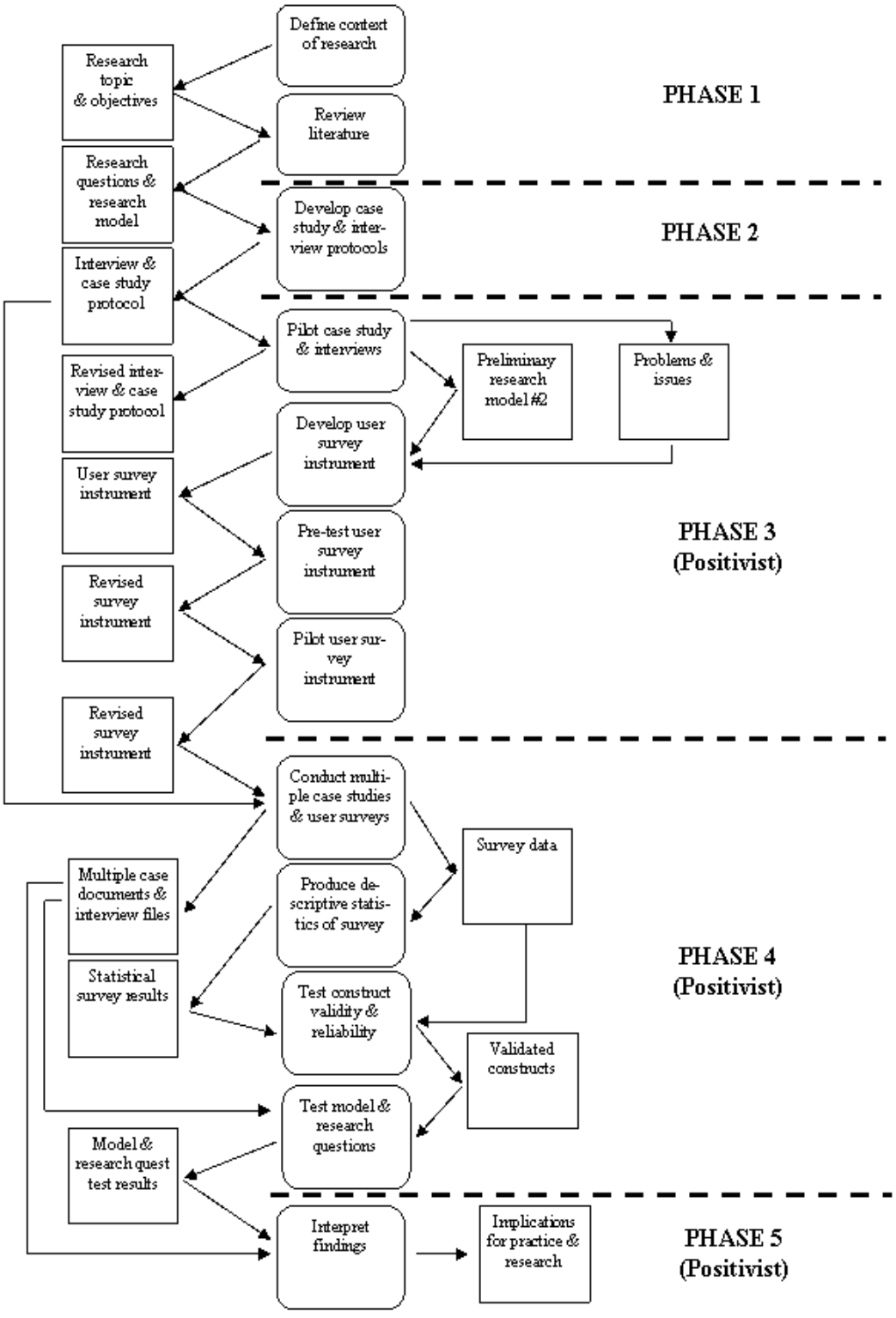


Figure 4.1: Research Methodology Flowchart (adapted from Gable (1994, p.118)).

The cases study interviews were qualitative in nature and were used to explore the IT governance structures and their associated effectiveness through the various contextual understanding of the study's participants. The survey component was quantitative, focusing on gathering data from a wide number of IT user stakeholders about their level of participation in that system. The initial case study interviews were supplemented by the results from the quantitative survey which extended the gathering of data related to user participation in the IT governance process to a much larger group of subjects. Data in the survey was collected in a format that enabled numerical analysis to test, in part, the findings from the qualitative data extracted from the case study interviews.

This study consisted of five phases employing a positivist paradigm with largely explanatory purposes.

4.4 Review of literature and development of preliminary model

A review of the existing literature pertaining to IT governance, governance and related areas was undertaken in phase 1 of the research. The gaps in the literature identified in Chapter Two were used to develop the research questions. A research model was then developed in Chapter Three to address the research questions. The model represents the influence of user stakeholders on the IT governance planning and implementation process. The research model is discussed in detail in Chapter Three.

4.5 Case Study Methodology

The research involved the examination of the IT governance structures, and the influence of user stakeholders on the planning and implementation of these structures. Background information for each of the universities participating in the study was collected from various sources including from university publications, websites, and third party sources. Interviews of key IT personnel, business executives, and functional area representatives

were conducted. From the interviews and other artefacts collected the university's decision making processes were mapped and the IT governance mechanisms and issues identified. A survey of users was then conducted in each of the case study universities to determine the participation of the user stakeholders in aspects of the IT governance process.

Using a multiple case study strategy permits the in-depth study of IT governance influences and constructs within several individual universities. As Denscombe (1998) points out the use of case studies allows a variety of sources, data, and research methods to be employed by the researcher. Thus a multiple case study approach permits a flexible and thorough approach. The initial case study (CS2) was used as a pilot study. Whether the insights provided by the pilot study could be extrapolated to Australian based universities in general was determined through the larger number of case studies that formed phase 3 of the research.

Case study research can be a triangulation strategy, using different approaches and data sources to increase the validity of the research processes (Tellis, 1997). This research has used two forms of triangulation, data source and methodological. Data related to the same phenomenon is collected from several different sources to ensure its consistency in different contexts (Tellis, 1997). In practical terms this involved interviewing several subjects about the same event. Methodological triangulation involves the use of different approaches in the same research to increase confidence in the analysis of the data collected (ibid).

4.5.1 The unit of analysis

The unit of analysis in this research was the IT governance process that is in place and that is planned for the case study organisation. The selection of the IT governance process as the unit of analysis enabled the scope of the data collection to be clearly defined. The IT governance process specifically relates to the research questions and the research model discussed in Chapter Three. The IT governance process is the collection of

mechanisms that determine the achievement of the core outcomes of IT governance. The core outcomes are IT and business alignment, efficient use of IT resources, and management of IT risk. Further the IT governance process is the link between stakeholders and the core outcomes of IT governance as discussed in Chapter Two and Chapter Three.

4.5.2 Sources of data

The data collection specifically related to four areas being:

1. IT governance including the mechanisms in place and issues that were evident. The principal source of this data were the interviews of the CIO and the person to whom the CIO reports.

2. University organisational details such as income, resources available, research orientation, the degree of centralisation of the IT decision making and executive structure. This information was ascertained from background information, such as through website searches, and verified through the case study interviews.

3. The presence and influence of user stakeholders. This information was ascertained from background information, such as through website searches, and verified through the case study interviews and the survey of users.

4. User perceptions of the IT governance process, including the level of participation in IT decision making and satisfaction with various aspects of IT governance. This data was ascertained through the survey of users at each university participating in the study.

Prior to the case study interviews background information was gathered from publicly available information and documents, such as chancellor reports, organisational charts, and minutes of IT steering committee meetings. In addition, external sources such as the

Department of Education, Training and Youth Affairs were canvassed for relevant background information. The source and nature of background information that is not specifically referred to in this thesis is listed in Appendix Eight.

4.5.3 Selection of industry and cases

The research procedures involved the selection of eight case studies or 21.6% of public universities from the thirty seven such institutions in Australia. Details of the Australian universities considered for inclusion in the study were obtained from the Australian Vice Chancellors list.

The selection of case studies should be undertaken in a way to maximise what can be learned with the resources and time available (Tellis, 1997; Yin, 1994). Eight case studies, including the pilot study, were selected for this research on the basis of theoretical sampling. The research involves Australian public universities. Public universities in Australia were selected for a number of reasons:

- They are large organisations highly dependent on IT to support their core functions. IT governance is likely to be a significant concern to the university and the study therefore more relevant.
- Universities are generally understanding and tolerant of research studies and consequently likely to support the study.
- Universities throughout Australia are likely to be facing many of the same challenges and pursuing similar goals which allowed a more meaningful identification of variables that may impact on the governance structures.
- It allowed the exploration of how IT governance structures differ in organisations of a similar nature.
- The limiting to Australian based studies avoided the complications that may arise from the different laws and environments that exist in other countries.

The use of case studies in research permits a variety of sources, data, and research methods to be engaged by the researcher, allowing a thorough and flexible approach (Denscombe, 1998). CS2, the first case study undertaken, was used as a pilot study to refine and finalise the case study protocol through semi-structured interviews with staff involved in the governance of IT within the case study university.

4.5.4 Categorisation and selection of Australian universities

This section outlines the categorisation and basis of selection of Australian universities as the case studies. Australian universities have a diverse history and represent a wide range of origins and culture. Universities of the same broad origin tend to have not only a common history but also similar culture, traditions, and resource richness that have helped shape the governance structures of the university. Australian universities can be described according to five categories, based on their origin (Marginson & Considine, 2000). These are: (i) Sandstone; (ii) Redbrick; (iii) Unitechs; (iv) Gumtree; and (v) New Universities.

Sandstone and Redbrick

The Sandstone and Redbrick universities enjoy a strong reputation based on prior market positioning and strong academic cultures (Marginson & Considine, 2000). These are traditional institutions founded in Australia prior to the First World War or soon after. They tend to be the most resource rich universities and the most highly regarded in academic terms and have a very strong commitment to research.

Unitechs

Unitechs are post 1986 universities that were originally established as institutes of technology (Marginson & Considine, 2000). They formalised their status as universities in the period of deregulation of higher education in Australia. Typically they are large and relatively centralised with a strong and active marketing function. Unitechs are modern and open to a broad range of students.

Gumtree

These are universities established in Australia in the period between the early 1960's and the mid 1970's. Gumtree universities were relatively resource poor, struggling to promote a corporate identity and foster a unified spirit (Marginson & Considine, 2000). Common to institutions established in the Gumtree period were informal and democratic governance structures with a strong individualistic culture.

New Universities

New Universities, as the name suggests, are the newest entrants to the status of university being established in the post 1986 era (Marginson & Considine, 2000). The academic cultures of these new universities are less well developed and less traditionally orientated than other universities. Academics in new universities tend to identify with the institution rather than their own discipline.

The selection of the case studies for phase 3 were two from each of the categories suggested by Marginson & Considine (2000), that is: Sandstone/ Redbrick, Gumtree, Unitechs, and New Universities. This selection was based on the need to include a diversity of subjects to attempt to develop a model that can be applied to the wide range of universities that operate within Australia and to explore the effect of the business environment and other related moderating variables. The selection of case studies provided a range of corporate governance structures to validate the research model that was developed and refined throughout the research.

4.5.5 Data collection procedures

The CIO or equivalent from each of the proposed case studies was contacted to request agreement on behalf of their university to participate in the study. If the CIO did not agree another university from the same category was approached to request participation. If the CIO agreed to be involved a formal letter, shown at Appendix One, was forwarded to formally confirm involvement. A copy of the research protocol, shown at Appendix Two, was forwarded to the CIO or any other participant upon request.

The universities that agreed to be involved were offered access to the research findings upon completion of the research. Before the initial approach to the CIO the research was discussed with an academic staff member from the respective university with the view they would sponsor the research and provide an introduction to the CIO at their respective university. Universities invited to participate were advised that the universities and individual participants would not be directly identified in any publications or other material arising from the research.

4.5.6 Interview selection

In each case study university interviews were conducted with the CIO, the executive to whom the CIO reports, and representatives from the two core functional areas of research and teaching. Other personnel were interviewed dependent on the universities IT and organisational structure and size. The broad areas relating to each category of interviewee are shown in summary below and in detail in the interview portion of the case study protocol in Appendix Two. The interviewee and the purpose of the interviews were:

1. Chief Information Officer (CIO). The purpose of interviewing the CIO was to gather background information on the nature and scale of the IT operations. In particular the IT governance mechanisms used and issues experienced within the university, as well as the process that was undertaken to plan and implement the IT governance structure were identified. In addition the degree of participation of the IT area in designing, implementing, and operating IT governance constructs were also ascertained through direct questions.

2. The executive to whom the CIO reports. The purpose of interviewing the executive to whom the CIO reports was to determine any areas of concern within the IT governance structure and to gain a high level view of the relationship between corporate governance and IT governance within the university.

3. Research representative. The purpose of interviewing a representative of the research function was to determine the degree of participation of the research function in the process of IT governance. The extent to which IT governance met the needs of the research function was also ascertained through direct questions.

4. Teaching representative. The purpose of interviewing a representative of the teaching function was to determine the degree of participation of the teaching function in the process of IT governance. The extent to which IT governance met the needs of the teaching function was also ascertained by direct questions.

5. Other staff either from the IT or other areas were interviewed as required to elaborate on any issues that required clarification. Additional interviews largely depended on the size of the university and the complexity of its IT functions and organisational structure.

In each case study the total number of interviews varied according to several factors including the size of the university and the IT and executive structure of the university. In all fifty five interviews were conducted, Table 4.1 below shows the number of interviews by case study university. CS2 was the pilot case study and eight of the sixteen interviews related to validating the survey instrument and refining the interview protocol.

	Case Study University	Type	Interviews
1	CS1	Unitechs	6
2	CS2*	Unitechs	16
3	CS3	New	5
4	CS4	New	7
5	CS5	Gum Tree	3
6	CS6	Gum Tree	7
7	CS7	Sandstone	6
8	CS8	Sandstone	5
	Total		55

*Pilot case study with 8 interviews related to validating the survey instrument.

Table 4.1: Number of interviews by case study.

Table 4.2 below gives the classification of interviewees by Case Study. CS4 is the smallest of the universities examined and the CIO function was assumed by the Chief Operating Officer (COO) who answered directly to the Vice Chancellor. For the purposes of this study the COO was treated as the CIO and the executive with responsibility for the IT function. Additional IT leadership staff in that case study was interviewed to ensure a balanced impression of the IT governance structure was developed. CS5 was the only case study where the person to whom the CIO reports would not consent to an interview. In CS8 the person to whom the CIO reports consented to an interview but was not available during the period of the research visit. The CIO in CS3 was interviewed twice over a gap of several months to ascertain the success of a plan submitted for approval to the executive to comprehensively restructure the IT governance function.

		Unitechs Universities		**New Universities**		**Gum Tree Universities**		**Sandstone Universities**	
No.	**Interviewee**	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CS6**	**CS7**	**CS8**
1	CIO or equivalent	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	Executive to who CIO reports	**Y**	**Y**	**Y**			**Y**	**Y**	
3	Teaching representative	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	Research representative	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	Other IT staff	**Y**			**Y**		**Y**	**Y**	**Y**
6	Other faculty staff		**Y**				**Y**		
7	Other		**Y**		**Y**				**Y**

Table 4.2: Interviewees by Case Study

4.5.7 Interview procedures

Interviews were structured with the opportunity for the interviewee to elaborate on various issues through the use of some open questions. Specific questions relevant to the case study research instrument are listed in detail in Appendix Two containing the case study and interview protocol. Individual candidates for interview were advised that the interviews would take from 45 minutes to 1 hour. In the case of CIO's they were advised the interviews would take between 1 hour and 1.5 hours but could be conducted over two sessions if required. At the commencement of each interview session the interviewee was

asked for permission to digitally record the interview. If agreement was granted the Interview sessions were digitally recorded, transcribed then checked and verified to ensure accuracy. If sessions were not digitally recorded then detailed notes were taken and key points reiterated with the subject at the conclusion of the interview.

To ensure full and frank discussions all interviewees were assured that confidentiality and anonymity would be maintained. Yin (1994) suggested that the research rigour of a case study would be assisted through the use of protocols to ensure consistency and minimisation of researcher bias. For this research an interview protocol was developed and is discussed in detail in section 4.5.8. The protocol includes sections for each classification of interviewee and covered:

- Personal details
- Position details
- Specific questions grouped into the areas of inquiry relevant to each category of interviewee. These questions were a mix of closed and open questions.
- The opportunity at the end of the interview to make any additional comments about the areas discussed or about the conduct of the research itself.

4.5.8 Interview protocol

The interview protocol is included in the case study protocol and shown in full in Appendix Two. The interview protocol outlining the interview questions operated as a guide with a degree of flexibility as some questions became redundant as the interviews progressed. The general areas covered in the respective interviews were:

1. CIO interview protocol summary.

Part I – Organisational structure, culture, and background. To gather background data on the university and to establish the context of the IT function within the university.

Part II – Personal and position details relating to length of time as CIO, formal qualifications and experience. To gather information concerning the IT structure and the number of IT staff employed across the university.

Part III – IT governance mechanisms and constructs. To determine the specific IT governance mechanisms and processes that is used as well as the situation with IT governance at the university. Questions relate to IT and business goal alignment, the effective use of IT resources, and IT risk management.

Part IV – Effectiveness of IT governance. To estimate the effectiveness of the IT governance system that is in place at the Case Study University, including identifying issues that are evident.

Part V – Monitoring systems and metrics. To determine the IT governance monitoring systems and associated metrics used within the university.

2. Person to whom CIO reports interview protocol summary.

Part I – Personal and position details relating to length of time in the position, background and experience in IT management. To gather information concerning the IT structure and the business structure at the university.

Part II – IT strategic governance structure. Open ended questions to ascertain the strategic level mechanisms and executive attitude to IT governance, including how it aligns with strategic business management. IT governance issues from a business executive level are also ascertained.

3. Research representative interview protocol summary.

Part I – Person and position details relating to length of time in the position, background and experience in IT management. To gather information concerning the IT structure and the business structure as it relates to research at the university.

Part II – IT governance mechanisms and constructs. To ascertain the IT governance mechanisms and constructs operation and interaction with the research function. As well as to identify who participates in those mechanisms and to what degree. To determine the degree of satisfaction with the IT function at the strategic and operational level in addition to identifying issues from the teaching perspective.

Part III – Monitoring systems and metrics. To determine the processes available to collect and act on user feedback in respect of the IT function at the strategic and operational levels.

4. Teaching representative interview protocol summary.

Part I – Person and position details relating to length of time in the position, background and experience in IT management. To gather information concerning the IT structure and the business structure as it relates to teaching at the university.

Part II – IT governance mechanisms and constructs. To ascertain the IT governance mechanisms and constructs operation and interaction with the Teaching function. As well as to identify who participates in those mechanisms and to what level. To determine the degree of satisfaction with the IT function at the strategic and operational level in addition to identifying issues from the teaching perspective.

Part III – Monitoring systems and metrics. To determine the processes available to collect and act on user feedback in respect of the IT function at the strategic and operational levels.

4.5.9 Interview data analysis

Data collected through the interviews of the CIO and executive responsible for IT for each of the case studies was qualitatively analysed to determine the IT governance structures that were in place in the case study university. Any IT governance related issues that related to the research topic were also identified. The interviews were also

used to confirm details collected through the universities website and from other publications. Interviews with representatives from the teaching and research areas were analysed to identify the involvement of those areas in the IT decision making process and to identify IT related issues from the user's perspective. These interviews also served to confirm the understandings gained from the CIO and executive interviews in relation to the actual opinions of the research and teaching areas.

The qualitative data was grouped into themes or patterns to represent the research approach topics of interest such as the general criteria of IT governance, a technique employed by Miles and Huberman (1994). As further data was gathered the pattern-based groupings were further defined and additional patterns revealed. The first theme, the profile of the case study university, was developed to describe the background information that was collected for the case studies as was identified from the conduct of the pilot study. The second theme, the overall IT governance structure, represents the unit analysis that was defined from the initial development of the research approach.

The remaining themes were derived from areas of interest as identified in the literature, these themes included: (i) the degree of centralisation of the IT decision making (Penrod, 2003; Pirani & Yanosky, 2005); (ii) key IT decision makers (Weill & Ross, 2004b); (iii) user involvement in IT decision making (Fernandez, 2008; Agee, 2005); (iii) user relationship management (Agee, 2005; Bucher, 2001; Gillies, 2008); (iv) the degree of support for the IT governance process and initiatives by strategic level management (Gillies and Broadbent, 2005); (v) mechanisms to Enact IT Governance (Weill & Ross, 2004a); (vi) alignment of IT with the business strategies (Barton ,2003; Gillies, 2008; Weill and Ross, 2004a); (vii) efficient use of IT resources (Hunton et al., 2004; Musson & Jordan, 2005); (iix) IT risk management (Musson & Jordan, 2005); (ix) metrics and Performance Measurement (Gillies & Broadbent, 2005); and (x) issues in IT Governance (Voloudakis, 2010; Gillies & Broadbent, 2005; Meyer, 2006).

Data analysis occurred through the organising of the data into the themes. The themes related to the literature, the research questions and the research model as described below. Patterns within the themes were identified and used to organise and report results. The

data was first analysed on a case by case basis and then across cases to draw out the final conclusions and to confirm the research model. The findings in Chapters Five, Six, and Seven are verified by reference back to original supporting interview comments and any dissenting data discussed. The analysis identified whether a particular phenomenon was limited to one case or could be related to more than one case. Consequently the reporting reflects to how many and which cases the particular phenomenon applies.

An example of the data analysis can be given by the level to which user involvement occurred during the IT governance planning process. Comments from the CIO's or equivalent were analysed to determine whether involvement occurred at the faculty, school, and individual level or whether it occurred at all. Once determined, interviews and the survey of users were used to cross check the results. The outcomes were then analysed between universities to identify common patterns. The results when reported in this thesis were then supported by examples from appropriate sources; additional interview comments are shown in tables to strengthen the analysis.

There were thirteen themes established in the process of this research. These are:

1. Profile of Case Study University

The organisational profile relates to the general background of the university including the executive decision making structure and associated participants. Data concerning the history of the university and recent changes to its organisational profile and significant participants was included in this grouping. The general background information was used to establish the context of the research and is related to the research questions that refer to 'Australian universities'.

2. Overall IT Governance Structure

Details concerning the structure for strategic IT decision making in each of the case study universities was collected in this theme. Included in this aspect were details concerning the existence and role of IT related committees and advisory groups. The strategic overarching mechanisms of the IT governance constructs are of particular interest as they are used to assist in investigating the theoretical model of stakeholder influence on the

planning and implementation of IT governance in Australian universities proposed in this research. The overall IT governance structure is the unit of analysis (see Chapter Three) and relates to the 'IT governance mechanisms' component of the research model and is central to research question 1, which refers to the planning and implementation of IT governance. The main argument of this thesis revolves around the IT governance structure, including influences on the planning and implementation.

3. Degree of Centralisation of IT Decision Making

The literature of studies of IT governance in universities suggests that the degree of IT centralisation is a contentious issue with important implications for IT governance structures (Penrod, 2003; Pirani & Yanosky, 2005). This was confirmed by the pilot case study in this research and is included as a material topic with a potential impact on the IT governance structures in Australian universities. Centralisation relates to the 'governance structure' of the research model and the 'IT governance decision makers' component. There may also be an impact on the 'influence' and 'participation' relationships with centralisation impacting on the strength of the user influence and the degree of participation of the user stakeholders. Degree of centralisation is a feature of the IT governance structure and is expected to be relevant to the influence users can exert, issues relevant to the research question 1 and research question 2.

4. Key IT Decision Makers

The key individual and group based IT decision makers are identified to enable consideration of the structured approach to IT governance which focuses on the decision making rights of management (Weill & Ross, 2004b). This enabled similarities in key IT decision makers between case studies to be clarified, assisting in the cross case study analysis. The key IT decision makers theme relates to the 'IT decision makers' component of the research model. The IT decision makers determine the IT governance structure and represent those that will respond to the influence of the user stakeholders. As such the theme is relevant to research question 1 and research question 2.

5. User Involvement in IT Decisions

Several authorities in the literature point to user involvement as being a desirable, when managed correctly, IT governance mechanism serving several purposes including transparency of decision making and promoting realistic user expectations (Fernandez, 2008; Agee, 2005). User involvement in IT decision making relates to the 'IT governance structure' component of the research model and to the 'participation' relationship. As such user involvement also relates to research question 3. The user involvement in IT decision making is determined by interview and the postal survey.

6. User Relationship Management

For the purposes of this research user relationship management is related to user involvement but can be distinguished as the formal mechanisms in place to promote good user relationships and can involve a number of techniques including but extending beyond user involvement. The benefits of user relationship management are better communication, clarity of roles, more realistic user expectations, and better cooperation and coordination between IT and users at all levels (Agee, 2005; Bucher, 2001; Gillies, 2008). User relationship management as a mechanism of IT governance relates to the 'IT governance structure' component of the research model and to research question 2. It may also impact on the 'influence' and 'participation' relationships shown in the model and can be related to research question 1.

7. Degree of support by Strategic Level Management

The degree of support for the IT governance process and initiatives by strategic level management was identified as an important issue. Particularly of interest are the perceptions of the CIO and the executive responsible for IT. Such support was considered crucial to the success of the IT governance function in all organisations by Gillies and Broadbent (2005) among others. Degree of support by strategic level management may impact on the IT governance structure and has the potential to impact on the degree of influence the user stakeholders have. In terms of the research model this will involve the 'influence' relationship. The support of strategic level management is a mechanism of IT governance and related to research question 2.

8. Mechanisms to Enact IT Governance

The various specific mechanisms and processes employed within the case studies are identified and discussed. Their contribution to the IT governance structure already defined in point two is also described. There are a number of mechanisms and processes believed to contribute to IT governance with importance placed on their coordination and planned implementation (Weill & Ross, 2004a). The mechanisms of IT governance relate directly to the 'IT governance structure' component of the research model and to research question 2.

9. Alignment with Business Strategies

One of the key outcomes of an effective IT governance function included in the proposed model of effective IT governance in universities is alignment of IT with the business strategies and objectives of the university, at all levels. The fundamental importance of alignment is recognised by many authors including, Ryan and Raducha-Grace (2010), Weill and Ross (2004a), and Barton (2003). Alignment relates to the 'outcomes' relationship of the research model and to research question 4, which also relates to the IT governance outcomes.

10. Efficient use of IT Resources

The efficient use of IT resources is seen as one of the principal benefits of IT governance (Hunton et al., 2004; Musson & Jordan, 2005). Efficient use of IT resources relates to the 'outcomes' relationship shown in the research model and to research question 4, which also relates to the IT governance outcomes.

11. IT Risk Management

A comprehensive and coordinated approach to managing all aspects of IT risk is an integral part of the wider corporate governance responsibility of organisational risk management (Musson & Jordan, 2005). IT risk management relates to the 'outcomes' relationship in the research model and to research question 4, which also relates to the IT governance outcomes.

12. Metrics and Performance Measurement

A system of reviewing the strategic and operational success of the IT initiatives and other activities is instrumental in reflecting the dynamic nature of IT governance structures (Gillies & Broadbent, 2005). The metrics and performance measurement systems relate to the 'IT governance structure' component of the research model and to research question 2. The narrowing of the focus of this research in response to examiner comments has reduced the application of the metrics and performance measurement theme.

13. Issues in IT Governance

The various specific issues experienced within the case study universities are identified and discussed. There are a number of issues that may arise due to deficiencies in the IT governance structure (Voloudakis, 2010; Gillies & Broadbent, 2005; Meyer, 2006). The identification of issues in individual case studies are used to identify any matters that may relate to user influence. As such issues relate to the research model and research question 1 in general and may also assist in validating the model through confirmation with the data collected. The narrowing of the focus of this research in response to examiner comments has reduced the application of the issues in IT governance theme.

4.5.10 Survey

A postal survey was used to establish the degree of involvement of the IT users in each of the case study universities. The degree of involvement of user stakeholders in the IT decision making is directly related to research question 4 (see Chapter Two) and to the 'participation' relationship shown in the research model (see Chapter Three). The initial survey was tested as part of the pilot study for consistency of interpretation and understanding through completion of the survey by a group of six subjects. The subjects in this group were asked to complete the survey and then participate in an individual interview.

Feedback from these interviews was used to refine the survey instrument before its widespread distribution in the pilot and other case study universities. The survey

instruments were colour coded to identify the respective institution that each related to so that cross case study comparisons can be made but beyond this individual respondents cannot be identified.

4.5.11 Development of the survey instrument

The user survey instrument was used to ensure that there was consistency in respondents understanding of questions and that appropriate topics were covered in each survey to ensure the validity of cross case comparisons. The initial survey instrument was developed from the literature review. The original survey instrument was then referred to a research consultant employed at the pilot study University for comment. These comments were considered in revising the survey instrument.

This version was trialled on six respondents from the pilot study university who were from the same area as the survey target and broadly representative of the range of potential respondents. Their feedback resulted in refinement of the survey instrument. The refined survey instrument was then tested through the pilot study and based on the comments and responses received was further refined.

4.5.12 Survey instrument

The survey instrument is attached as Appendix Five. The general categories of survey question groups and their purpose is shown below.

Part A – Personal details to help build the user profile.

Part B – Details about the respondent's position to assist in placing the responses in context.

Part C – The use of IT resources by work category. To ascertain how often typical applications are used and to gauge the respondents level of satisfaction with those applications.

Part D – Computer use and purpose of use. To assist in developing a user profile and to ascertain how important IT is to teaching and research users.

Part E – Sources of information for operational and strategic IT and general business issues. To identify typical methods of information dissemination for strategic and operational IT issues within the university.

Part F – Level of involvement in operational and strategic decision making. Determine the level of participation in IT and business decision making. Business decision making is included for comparison purposes.

Part G – Opinion and awareness of the decision making process. These are twenty six questions related to the respondent's attitude and perception of IT at the case study university. The question responses were based on a 5 point Likert scale, with 5 being strongly agree and 1 indicating strongly disagree. An option of 0 was included to allow respondents to indicate 'Does not apply to me'. The questions can be grouped into three areas of research interest; General respondent profile and attitude to IT (questions G1 to G9 and question G12), satisfaction with aspects of IT (questions G10 and G11, questions G13 to G18, and G25 to G26), and the respondents use and perceived use of IT (questions G19 to G24).

Part H – The short and long term IT issues. To determine what are the most pressing long term and short term IT issues for the academic areas.

Part I – The short and long term business issues. To determine what are the most pressing long term and short term business issues for the academic areas. This was used for comparison purposes.

The final page of the survey provided space for respondents to provide any additional comments in respect of the survey or IT governance in universities.

4.5.13 Survey procedures

Logistical details of potential respondents were extracted from staff listings in the relevant area of the web sites of each of the case study universities. These listing were confirmed as being up to date prior to distribution of the survey. Surveys were distributed as soon after the conduct of the interviews at the case study university as was practically possible. This was to assist in making the survey responses as chronologically relevant to the qualitative data collected as possible. After the initial distribution of surveys one round of reminder surveys were distributed if a low level of responses had been received from any particular case study.

The survey was accompanied by an explanation letter inviting participation by completing the survey and assuring respondents that all responses would be anonymous. Directions for completing and returning the survey were contained both in the accompanying letter and on the front cover of the survey itself. A postage paid, addressed A4 envelope was included to facilitate return of the survey. The address for return of the completed survey was also contained on the back cover of the survey. Respondents were advised in the accompanying letter that it should take on average thirty minutes to complete. The letter accompanying the survey is reproduced in Appendix Four.

Table 4.3 below indicates the survey distribution and response levels for each of the Case Study Universities. The minimum response rate was just under twenty eight percent with the highest response rate of over thirty three percent, with an overall rate of just over thirty percent. CS2 was the pilot study and subsequently involved the distribution of more surveys. A higher survey rate did not compromise or bias the results as the analysis was first done on a case by case basis, with the results from each case then being compared for similar trends.

The overall response level of 30.2% was considered to be sufficient for analysis as most statistical analysis is performed on sample sizes of 10% to 20% (Harrison & Tamaschke, as cited in Allinson, 2002). Surveys returned as address unknown or indicating the addressee was no longer employed at the institution are listed in Table 4.3 as 'returned as invalid' and excluded from the response calculations.

	University	Type	Surveys Sent	Returned as Invalid	Valid Surveys	Responses	Response %
1	CS1	Unitechs	109		109	33	30.3%
2	CS2*	Unitechs	186	6	180	58	32.2%
3	CS3	New	127	3	124	36	29%
4	CS4	New	93		93	28	30.1%
5	CS5	Gum Tree	85		85	24	28.2%
6	CS6	Gum Tree	85	1	84	28	33.3%
7	CS7	Sandstone	113	1	112	33	29.5%
8	CS8	Sandstone	104		104	29	27.9%
	Total		**902**	**11**	**891**	**269**	**30.2%**

*CS2 was the pilot study.

Table 4.3: Survey distribution and response levels.

4.5.14 Selection of survey respondents

The survey was distributed to all staff employed on an ongoing basis in the Faculty of Business in each of the case study institutions. For the purposes of receiving sufficient responses to support a meaningful analysis a minimum of eighty surveys were distributed to each case study university. If there were insufficient school of business staff in a particular university then the balance of surveys needed to meet the minimum were distributed to the school of humanities. The conduct of eight case studies meant there were not enough resources available to survey every staff member of each of the participating universities. Consequently the business areas were selected for a number of reasons: (i) the faculty of business in most of the case study universities was a convenient size to ensure sufficient likelihood of an acceptable number of responses; (ii) each participating university had a business studies area; and (iii) the business areas were all

cooperative with the research. The use of the school of humanities to achieve a sufficient survey distribution was done for two reasons: (i) on the basis of convenience; and (ii) each participating university had a school of humanities. Details of the survey distribution and response levels by case study and in total are shown in Table 4.3.

4.5.15 Survey data analysis

The quantitative data collected from the postal survey was analysed using SPSS and Microsoft Excel to establish user profiles and to discern trends and interrelationships in the data. Ultimately the goal of the data analysis was to build the data gathered into a coherent, plausible model of user participation in the IT governance structure and their perception of the effectiveness of that structure in their university individually and in the sample universities collectively. Neuman (2006) holds that qualitative data analysis facilitates the verification of a sequence of events or steps in a process, as is the basis of the model in this research. This was further enhanced by the application of the quantitative and qualitative analysis to the research questions and the research model.

All data collected was analysed in respect of each case study individually, across the case studies, and collectively for all case studies combined. The organisational details and the IT governance mechanisms and issues from this analysis is discussed further by case study in Chapter Five and Chapter Seven. The analysis of the survey data is discussed in Chapter Seven with some limited discussion in the Chapter Six and Chapter Eight.

4.6 Research Validity

Research validity is defined by Shadish, Cook, and Campbell (2002) as the ability to produce findings that will support a particular inference or the accuracy of such an assertion. There are several types of validity defined in the literature only those considered relevant to this research are discussed in this section.

4.6.1 Reliability

Reliability is defined by Miles and Huberman (1994) as the consistency of the process of the study or whether the research findings can be replicated by different researchers and methods. Reliability in this research has been strengthened through the replication of the findings using different methods. User participation in IT decision making for example is confirmed through two methods: (i) through the survey part F and part G; and (ii) through interviews with user stakeholders.

Interview reliability

Miles and Huberman (1994) discuss a number of indicators to support reliability in a qualitative study. Consistent with the indicators a pilot study involving testing of the interview protocol to ensure clarity and consistency was undertaken with a number of stakeholders from different levels and areas. Different levels of user stakeholders and other IT governance participants were included in the interviews.

The development of a conceptual framework and conceptual process to guide the research assisted in the robustness of the application of the basic paradigms and analytical constructs to the research approach added to reliability. Triangulation was also used to promote reliability in the interview analysis with the findings being tested for consistency across the different methods used within the study. For example, survey results from research and teaching respondents tend to reflect the findings of the interviews with representatives from the research and teaching areas in the individual case studies.

Interviews were recorded, transcribed, and verified by the interviewee to ensure reliability of the data gathered in the interview process. Significant information was repeated and discussed with the interviewee at the end of the interview to confirm their accuracy.

Survey reliability

In the survey conducted as part of this research reliability is increased through internal consistency in the survey where different questions independently relate to the same concept being measured. A pilot study involving testing of the survey instrument to ensure clarity and consistency were undertaken with a number of respondents from different levels of users. A conceptual framework and conceptual process was developed to guide the research and to assist in the robustness of the application of the basic paradigms and analytical constructs to the research approach. Triangulation was also used to test the findings for consistency across the different methods used within the study.

4.6.2 Internal Validity

Miles and Huberman (1994) suggest triangulation, or the use of a variety of data sources and methods, can strengthen internal validity. In this research triangulation by data source and method have both been used to add to internal validation. Various data sources and methods have been used to gather and validate data. These include document searches, overlapping interviews of key personnel including representatives of core functional areas, and by postal survey to users. The data types are also triangulated using qualitative and quantitative types.

4.6.3 External Validity

External validity is the extent to which the findings of the research can be generalised or applied across other settings (Shadish et al., 2002). In this study this would be the population of Australian universities and other external settings. Shadish et al. (2002) suggest that the more similar the features of the other settings the higher the degree to which the research findings can be extrapolated. In the context of the application of the

results of this research to the population of public universities in Australia the external validity has been increased by a number of characteristics.

First, a large number of case studies were undertaken representing almost 22% of the research population of public universities in Australia. Second, the case studies represented a selection from across the range of universities within Australia in terms of history, financial resources, research orientation, and other criteria. Both these steps limited the change in factors that would be experienced by applying the findings to other universities in Australia. Application of the findings of the study to organisations outside the target population of Australian public universities is discussed in Chapter Nine, and conservatively is considered to involve further research due to the number of organisational and other factors that would be different.

4.6.4 Construct Validity

Construct validity is the extent to which the theoretical constructs are operationalised in the research (Shadish et al., 2002). In this research construct validity can be expressed as, to what extent do the influence of user stakeholders impact on the planning and implementation of IT governance in Australian universities and how does that reflect on the IT governance function within that organisation.

Contributing to construct validity in this research is a number of factors. First, the literature is aligned with the key elements of the research models in Chapter Three. Second, as suggested by Judd, Smith, and Kidder (1991), the findings of the research are measured in several ways and the outcomes compared. Third, different sources of information are used, such as document searches, interviews, and postal surveys, to collect and verify data and relate it to the theoretical constructs (Yin, 1994). As articulated by Shadish et al. (2002) the domain of intended application of the research has been clearly defined in Chapter Three and in this chapter.

4.7 Ethical Considerations

Consideration was given to the ethical aspects of the research in conducting interviews and the postal survey. Full disclosure was made to the Curtin University Ethics Committee and appropriate approval obtained before any interviews or surveys were conducted.

4.8 Chapter summary

This chapter has outlined the research methodology, including the research design, approach and data analysis procedures. Details of the specific methods of a case study based research using both qualitative and quantitative methods has also been described and discussed. The validity of the research methods is supported by a triangulation approach.

The research centred on determining the influences that help shape the IT governance structures from the planning and implementation stages in Australian universities. The pivotal theme as stated in the thesis argument is that "*one of the key factors in the planning and implementation of IT governance is the influence of user stakeholders*". The research methodology described in this chapter is designed to support the resolution of the research questions developed in Chapter Two and to validate the research model described in Chapter Three.

The research approach involved the use of case studies with data collection occurring through collection of documents, through web searches and other sources, interviews of key personnel participating in or affected by the IT governance structures, and a survey of users to gauge their perception of and level of involvement with the IT governance structure.

The next chapter provides background information for the case study universities, including decision making structures. Chapter's Six to Nine then discuss the findings of the research in respect of the case studies.

Chapter 5 – Organisational factors and user influence

5.1 Chapter Introduction

This Chapter discusses the organisational factors that affect the implementation and planning of IT governance, including the business and IT decision making structures. It addresses whether user stakeholders have an influence on the IT governance planning and implementation and the consideration of factors within the organisation that may impact on their influence. As such it is important to the thesis topic which in part states, "*One of the key factors in the planning and implementation of the IT governance mechanisms is the influence of user stakeholders*". The chapter also relates to research question 1, "*What influence do user stakeholders have on the planning and implementation of IT governance in Australian universities?*" The discussion includes consideration of the size, financial resources, and research orientation of the universities participating in the study to assess any impact they may have on the influence of users. The IT governance decision makers are identified, including the participation of user stakeholders in IT decision making processes, to determine if user stakeholders do influence the IT governance planning and implementation and at what level the influence is exercised. The strategic business decision makers are also identified as IT governance decision making should not be considered in isolation from the strategic business decisions (Hunton et al., 2004).

Section 5.2 considers the effect of the demographics of the cases studied, including student numbers, research orientation, and availability of financial resources. Section 5.3 discusses the business and IT related decision making structures including the role and influence of the Vice Chancellor, Deputy Vice Chancellors, and the faculties. Section 5.4 identifies the IT strategic decision makers and the degree of support given by strategic level management is discussed. Section 5.5 then considers the findings resulting from the data presented in this chapter. The chapter concludes with a summary in section 5.6.

5.2 Demographics of case studies

The demographics of the universities participating in this study are considered in relation to two areas: (i) the effect of the demographics on the influence of the user stakeholders; and (ii) how the demographics may affect the IT structures and decision making. As such the demographics considered relate to the thesis topic areas of user stakeholder influence and the IT governance planning and implementation process the users seek to influence. The thesis topic and research question 1 both focus on the user stakeholder influence on the IT governance planning and implementation process. The research model components of 'user stakeholders' and the 'influence' relationship shown in the model also relate to the discussion in this section.

The demographics discussed are the three basic criteria of size, financial resourcing, and the research orientation of the university. Weill and Ross (2004a) considered that IT governance had much in common with the general governance process and should be considered as an integral part of the organisations overall governance. Weill and Ross (2004b) suggested that organisations would have IT governance structures designed to complement the organisation's strategic focus. In the case of universities this would mean that if the universities core focus was on operational efficiency and cost control then it would more likely adopt a centralised governance structure. Conversely, if the core business focus was on research and innovation then it would more likely adopt a decentralised IT governance structure (Miller, 2002; Weill & Ross, 2004b).

Comparatively smaller and less resourced institutions may be tempted to under resource their investment in IT governance or to demand a return on IT investment that is not realistic and may damage the outcomes of IT governance. The preoccupation of management for more return on investment and the optimisation of costs of IT activities is acknowledged as a key business driver of the importance of IT governance (ISACA IT Governance Institute & The Office of Government Commerce, 2005).

5.2.1 Size by student numbers

Table 5.1 shows the student numbers of the cases studied and the increase in student numbers over the period 2002 to 2011 (the latest figures currently available). CS3 and CS7 have had the least increase in the number of students since 2002, with all other universities in the sample reporting increases of 37% to 81% over the nine year period. Based on student numbers in 2011, the eight case study universities account for 21.6% of the total student enrolment in Australian univeristies.

Case Study No.	Type	2002	2008	2011	2011 % of all students	% Increase 2002 to 2011
CS1	Unitech Universities	38,280	40,134	53,407	4.4%	40%
CS2		33,240	35,189	45,556	3.7%	37%
CS3	New Universities	23,829	20,480	27,111	2.2%	14%
CS4		10,419	9,501	15,513	1.3%	49%
CS5	Gum Tree Universities	12,734	13,973	19,715	1.6%	55%
CS6		13,644	14,508	19,736	1.6%	45%
CS7	Sandstone Universities	52,010	51,260	63,338	5.2%	22%
CS8		11,979	14,848	19,313	1.6%	61%

Source: Australian Government Department of Industry, Innovation, Science, Research and Tertiary Education (2012).

Table 5.1: Number of students by University for 2002, 2008 and 2011.

The size of the university did appear to impact on the strategic direction in the case of CS4, the smallest university in terms of student numbers. The Chief Operating Officer made reference to this in the statement: “We did it to generate cost savings because as a smaller university I don’t think we can access the economies of scale of a big university and that becomes an entrenched cost disadvantage unless you do something about it. Outsourcing is a classic way to do that. But in addition to the cost issues we were attracted to this outsourcing approach because we felt that we would get a capability uplift.”

In summary, the sample universities operate in a rapidly expanding industry with all universities experiencing large and ongoing growth in student numbers over the last

decade. The sizes of the case studies vary greatly in terms of student numbers from the smallest with 15,513 students to the largest with over 63,000 students. Although impacting on the size of the IT operations only the smallest sized case study reported any impact of size on IT decisions and in this case the decision making process itself was not affected.

5.2.2 Financial resources

Tertiary institutions are required to annually prepare financial statements in accord with the financial reporting requirements of Commonwealth and State agencies. The most recent statistics available are for the year ended 31 December 2007. Income, expenses, and the resulting net income for 2007 is shown in Table 5.2. CS4, one of the new universities, reported a significant operating deficit with all other case study universities reporting surpluses of between $20 million and over $95 million.

Case Study No.	Type	Total Revenue ($'000)	Total Expenses ($'000)	Net Income ($'000)
CS1	Technology Universities	594,527	555,574	35,626
CS2		566,475	490,741	75,734
CS3	New University	266,789	246,696	20,093
CS4		123,186	139,027	(15,841)
CS5	Gum Tree Universities	292,268	227,618	64,650
CS6		270,174	241,443	28,731
CS7	Sandstone Universities	1,143,438	1,093,315	50,123
CS8		784,969	689,516	95,453

Source: Australian Government Department of Education, Employment and Workplace Relations (2008a).

Table 5.2: Net income by University for 2007 (Most recent figures available).

In all tables above revenue and expenses are before abnormal items, and net income is including abnormal items but before taxation (Australian Government Department of Education, Employment and Workplace Relations, 2007).

Table 5.3 below shows the assets, liabilities, and net assets for each of the case study universities. As asserted by Marginson and Considine (2000) the Sandstone universities have the highest value of net assets available. They are followed by the Unitechs with the other categories of universities with wide ranges of available net assets.

Case Study No.	Type	Total Assets ($'000)	Total Liabilities ($'000)	Net Assets ($'000)
CS1	Technology Universities	1,501,833	452,489	1,049,344
CS2		906,854	217,765	689,089
CS3	New University	802,627	152,295	650,332
CS4		290,858	29,128	261,730
CS5	Gum Tree Universities	686,549	68,983	617,566
CS6		460,436	90,260	370,176
CS7	Sandstone Universities	2,059,759	695,139	1,364,620
CS8		2,623,891	729,128	1,894,763

Source: Australian Government Department of Education, Employment and Workplace Relations (2008b).

Table 5.3: Net Assets by University for 2007 (Most recent figures available).

Over the years 1998 to 2007 the New universities reported the lowest increase in income, which for CS4 was outstripped by increases in expenses for the same period (Australian Government Department of Education, Employment and Workplace Relations, 2007). The financial situation of CS4 is consistent with the interviews from that university which indicated an ongoing emphasis on cost control was a strong force in guiding IT initiatives. The CIO of CS1 gave a typical example; "If you asked me today am I happy I would say that I've inherited a group that's under-resourced. It's underfunded in the sense that it's been under-resourced for some time. Am I getting support to change that? I'm getting lots of moral support and I'm getting lots of understanding nods of the head."

A selection of additional interview comments related to financial issues is shown in Table 5.4 with additional comments listed in Appendix Ten. The comments show that financial issues were of concern to the university executive with many institutions describing their situations as a 'crisis', from which the institutions were only just emerging. Although the financial stress was much less in CS7 and CS8 the comment shown in Table 5.4 from the

VP resources in CS7 indicated finances were still an important consideration in these institutions.

No.	Case Study	Position	Comment
1	CS4	COO	The University ran into quite a significant financial crisis in 2007/ 2008 and that reflected a long period of very poor management of the university. One feature of that era of mismanagement was an underinvestment in IT. What's going on now is actually putting in place some of the functions and governance structures and risk assessment process that should have been there all along but just have fallen by the wayside.
2	CS6	DVC Administration	The University went through a financial crisis in the early part of this decade. But if you look at our financial history since the end of 2003 this organisation has recovered strongly. … The quality of people he's [the CIO] got and their ability to catch up with and keep in pace with the needs is to some extent ruled by our past history rather than where we need to go in the future.
3	CS7	VP Resources	We got money out of the federal government to do a review of shared services. The scoping of that indicated that whilst we spend about fifty million dollars centrally on IT split between operating and development projects and infrastructure we spend probably the equivalent of that in the faculties. So that was the principal driver that at least if we've got a hundred million dollars plus spend we should be moving toward one governance structure, one operating structure and one budget for that amount.

Table 5.4: A selection of interview comments on financial issues.

The significance of the reported financial stress was a prolonged period of emphasis on reducing costs across the university, including for IT. This had a twofold and somewhat conflicting result in several university case studies. First, IT suffered from a shortage of investment and the need to reduce costs, which significantly reduced strategic IT initiatives. Second, and generally more recently, several of the universities have justified and gained support at least in part for major IT governance restructures based on an immediate promise of reductions in university wide IT costs. The comment by the VP Resources at CS7 is a typical example; "There is still some reluctance in some faculties. But the other thing is there is no doubt that the project is delivering gains already and delivering quantifiable auditable gains. Our biggest net savings are in purchasing".

A selection of additional interview comments related to the importance of cost control is listed in Table 5.5. Comments emphasising the impact of cost control were made in all categories of universities.

No.	Case Study	Position	Comment
1	CS1	CIO	I think there's enough money within the university. I think it's raising the profile of IT to get the funding allocated.
2	CS4	COO	At the start of last year as we were trying to get our hands around the extent of our financial issues we undertook an evaluation or process simplification exercise using some external consultants. The underlying idea was both to give ourselves a more efficient operating environment but also to cut cost. The result was we've ended up outsourcing a substantial amount of our IT function to Wipro in India.
3	CS6	CIO	My view is that she [DVC Administration] is working very hard to keep costs down because she has no choice. But you have to also think well you can keep costs down but if you do that what do you lose, what has it cost you?

Table 5.5: A selection of interview comments on cost focus.

Examples of the periods of financial stress were reported across a number of the case studies. All have reported strong recoveries in terms of University finances but the effects of the financial stress on the IT function are still evident. CS1, CS4, and CS6 reported the IT functions were still recovering from the long term issues associated with extended periods of under resourcing. For example, see quote 2 in Table 5.5.

The importance of cost control and being able to promise cost savings to gain executive support for IT initiatives was demonstrated through a number of the interviews. The underlying theme was the concern that simply focusing on costs could adversely affect some of the more intangible benefits from a well resourced IT function. For example, see quote 3 in Table 5.5. Although far better resourced the Sandstone Universities were also concerned with cost control. In extreme situations it appeared that cost control emphasis can dictate the organisations operational strategy. In CS4 this appears to have been one of the main drivers in the decision to outsource a significant portion of the IT function.

In summary resourcing appears to be a significant ongoing barrier to the development of the IT function. Whether they considered they were currently under resourced or not the issue of resourcing was a recurring topic in the CIO and DVC interviews in all of the case studies. In several cases the problem appeared to be not one of the University lacking the finance but of the IT function gaining a larger allocation of the funds available.

Historically, the resources available to the university appear to have had a significant impact on the IT governance operations and have at least in part influenced the IT governance structure and mechanisms. The impact of this on the centralisation of the IT governance function is considered in more detail in section 5.4.3. How this has influenced the IT governance mechanisms in place is discussed in more detail in Chapter Seven and Chapter Eight.

5.2.3 Research orientation

Table 5.6 below indicates the research expenditure by case study for the latest year such figures are available (2002). At that time the highest research expenditure in total amount was by the Sandstone universities at 70%. The lowest research expenditure in dollar terms was by the New universities at 4%.

Case Study No.	Type	Expenditure on Research & Experimental Development ($'000)	Total Expenditure ($'000)	Research as a % of total expenditure
CS1	Technology Universities	54,901	495,468	11.1%
CS2		56,452	358,992	15.7%
CS3	New University	22,705	187,397	12.1%
CS4		4,367	105,729	4.1%
CS5	Gum Tree Universities	50,693	154,459	32.8%
CS6		70,079	166,961	42%
CS7	Sandstone Universities	242,799	713,687	34%
CS8		334,476	473,586	70.6%

Source of Research Expenditure data: Commonwealth Department of Education Science and Training, (2004).

Table 5.6: Research Expenditure by University for 2002 (Most recent figures available).

Table 5.7 below shows Australian Government Department of Employment, Science and Training (DEST) and Australian Research Council (ARC) research grants for the year ended 31 December 2007. The highest total research grants were made to the Sandstone universities, followed by the Unitechs as a distant second. The New universities case studies received the lowest total amount of research grants from DEST and ARC.

Case Study No.	Type	Research Grant Income ($'000)	Income ($'000)	% Research Grant of Income
CS1	Technology Universities	28,017	594,527	4.71%
CS2		28,032	566,475	4.95%
CS3	New University	7,514	266,789	2.82%
CS4		6,025	123,186	4.89%
CS5	Gum Tree Universities	21,668	292,268	7.41%
CS6		24,825	270,174	9.19%
CS7	Sandstone Universities	120,803	1,143,438	10.56%
CS8		121,436	784,969	15.47%

Source: Australian Government Department of Education, Employment and Workplace Relations (2008b).

Table 5.7: DEST and ARC Research Grants for 2007.

The importance of research to the IT strategic direction was demonstrated by most of the sample universities but, as discussed, appeared to have more of an impact in the two Sandstone universities with the highest research grant income. The other case studies did acknowledge a growing recognition of the importance of supporting research through the IT function. The comment from the VP Resources of CS7 gave a common response; "There will always be a balance but we want to try and put it more into a central co-ordination without stifling research and teaching creativity at the local level".

A selection of additional interview comments related to the influence of the research orientation of the university is shown in Table 5.8. The balance between preserving research support and making resourcing savings was mentioned in most of the cases, as

illustrated in Table 5.8. The strong research orientated case studies made it clear that the balance would always sway in favour of research over cost savings.

No.	Case Study	Position	Comment
1	CS1	CIO	It's almost like a clash of cultures between the academic side of the university that is wanting to use technology in a teaching, learning and research sense. Then you have got sort of what's been referred to as the corporate approach to managing budgets. Those two don't necessarily align.
2	CS7	CIO	Flexibility and capability and using IT to do things that will really help the research community. There will be a lot of devolvement and a lot of independence. I would not try and change that.
3	CS8	CIO	One of the reasons why we leave a lot with the colleges is the Institution is primarily one of research. It is research driven.

Table 5.8: A selection of interview comments on research orientation.

Research was acknowledged as one of the prime functions of the case studies and the importance of IT activities to be aligned with the research function also acknowledged. The research activities as measured by research grants and research expenditure varies greatly between the case studies with the far most research intensive being the Sandstone universities. Interviews with the IT executive in the two Sandstone case studies made it clear that although important cost control would be secondary to the need for IT to support research. This emphasis was not as strongly reflected in the other case studies. The influence of research orientation is further considered in section 5.4.3.

5.3 Organisational decision making structures

The organisational decision making structures are discussed for two reasons: (i) IT governance decision making is a subset of the organisational decision making (Gillies & Broadbent, 2005); and (ii) the organisational decision makers may also be the IT governance decision makers. The thesis topic centres on the IT decision making being

influenced by user stakeholders and the identification of the IT decision makers is instrumental to the thesis topic and the 'IT decision makers' component of the research model.

IT governance is integrated with the corporate governance structure of the organisation and as such is an ongoing process that is the ultimate responsibility of those who direct and control the organisation (ISACA IT Governance Institute, ND; Lucy, 2004). Universities are unique organisations but have adopted many of the mechanisms and governance structures of other enterprises (Rytmeister, 2009; Marginson & Considine, 2000). As such the organisational decision making structures interrelate with the IT governance structures and provide a valuable insight into their operation (Gillies & Broadbent, 2005).

This section considers the general decision making structure in the case studies. The organisational decision making structure refers to the positions in universities where the strategic decision making power and influence tend to reside. The importance of this to the IT governance process is twofold: (i) the strategic decision making structure directs the IT function as it does all functions of the university; and (ii) the IT governance process must operate within the political environment within the university. The implementation and implication of these structures differ from university to university. The impact of individual variations on the IT governance structures are discussed in more detail in Chapter Six.

5.3.1 Vice Chancellor Position

Strategic decision making within the university structure rests ultimately with the Vice Chancellor who reports to the university council which is the ultimate governing body under the guidance of the Chancellor. The CIO of CS3 provided a typical description of the Vice Chancellors position; "The VC reports to council and I guess council can tell him what to do or the chancellor presumably in the strict hierarchy of things. But in terms of operating the university the vice chancellor is an autocrat".

A selection of additional interview comments explaining the Vice Chancellor position is shown in Table 5.9. The comments, which are typical of those made in each of the participating institutions, indicate that, although faculty support was important it was the Vice Chancellor's support that was critical to change.

No.	Case Study	Position	Comment
1	CS4	COO	Those sorts of governance bodies [Committees] are a cultural manifestation as well as an organisational manifestation. In particular in universities it's a challenge because so much organisational power in a university points at the vice chancellor. In that sense university structures are very different to corporate organisation structures
2	CS6	DVC Administration	With or without faculty support I think if it [centralisation] comes out as a review recommendation. The VC will then accept the recommendation and will move towards that kind of centralisation
3	CS7	VP Resources	There was an enormous amount of consultation but in the end faculties endorsed it but it would be inaccurate for me to say that there's raving enthusiasm in the faculties. The vice chancellor had to force it through at the end. There are some faculties who are engaging the process while some are putting up barriers

Table 5.9: A selection of interview comments related to the Vice Chancellor power.

In all instances where organisational change was pursued it was only successful if it had the ultimate support of the Vice Chancellor, particularly in view of the substantial influence of the faculties. The importance of the support of the Vice Chancellor was acknowledged at all levels in all of the case studies.

5.3.2 Deputy Vice Chancellors and Vice Presidents Positions

The next level of management below the Vice Chancellor is the Deputy Vice Chancellors and Vice Presidents (VP). In some smaller institutions the Chief Financial Officer (CFO) and the Chief Operating Officer occupy positions equivalent to the DVC's. The DVC's

assume the responsibility for their portfolios and participate in the strategic management of the university, usually through various committees chaired by the Vice Chancellor.

The CIO of CS5 described the typical executive management structure as, “The VC has such an external focus. They’ve got a day to day focus to run the university but allow the DVCs to run the operational areas within the universities. He’s there to deal with the fighting between them and things like that. But very much his focus must be external and the image of the university and how we run our university and how it’s perceived by others.”

The DVC and VP positions form the next level of strategic management below that of the Vice Chancellor. These are the positions to which each of the CIO in the case studies answer with the exception of CS6, the smallest university where the Chief Operating Officer, the equivalent of a VP, has assumed the responsibilities of the CIO.

5.3.3 Faculties and Colleges

Among the eight case study universities there was a commonality of strategic organisational decision making with some divergence at the positioning of the faculties in the governance structure. These could be categorised into two types. In the first type the faculties do report directly to the Vice Chancellor. These universities were more decentralised with the faculties having more power and responsibility. The executive deans of the faculties tended to be members of the strategic decision making committees of their institutions.

In the second type of governance structure the faculties did not report directly to the Vice Chancellor, but instead they were answerable to a Deputy Vice Chancellor (DVC) Academic or equivalent who in turn reported to the Vice Chancellor. These universities were more centralised with the faculties having less power and less responsibility. The faculties were represented on the strategic decision making committees by the DVC Academic and usually one faculty executive on a rotational basis.

Those with direct faculty representation also tended to have the more devolved IT governance decision making. Those without the direct faculty representation had the more centralised IT governance structures. This is discussed in more detail in section 5.4.3 of this Chapter.

As shown in Table 5.10 three of the case study universities had decentralised faculty level decision making. These were both the Sandstone universities and one of the Gum Tree universities. These three universities had the highest percentages of (a) research expenditure out of total expenditure and (b) research grant income out of total income (see Tables 5.6 and 5.7). Greater decentralisation of IT seems to be associated with higher investment and success in research.

The remaining case studies had the comparatively more centralised decision making structures with the faculties only indirectly represented on the strategic decision making bodies of their institutions. These are generalised structures with some universities using different titles and different divisions of responsibilities at the DVC level.

Type.	Type	Total	Unitechs Universities		New Universities		Gum Tree Universities		Sandstone Universities	
			CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
1	Faculties direct report to VC	3						**Y**	**Y**	**Y**
2	Faculties indirect report to VC	5	**Y**	**Y**	**Y**	**Y**	**Y**			

Table 5.10: Case studies by type of organisational structure.

The historically devolved nature of universities with the key activities of research and teaching emanating from faculties and schools within faculties, has placed a lot of decision making at that level. The situation described by the CIO in CS6 was typical of all the universities reviewed. “There was a review of IT eleven years ago they brought together a number of central units into the ITS division but they left the faculties under faculty management with the IT operations under faculty management and they developed what was referred to as an IT policy that identified the division of

responsibility within ITS and the faculties. It was still pretty rational. It was very rational. And it can be clearly quite succinctly defined. The faculties have responsibilities for things this side of the plug on the wall and the ITS division have responsibility for everything on the other side and the services that pass through the plug as well."

The three strongly research orientated universities (two sandstone and one gum tree) have faculties that report directly to the Vice Chancellor. In these three case studies with direct faculty reporting to the Vice Chancellor the faculties appeared to be particularly influential.

5.3.4 Faculty and Central IT Relationships

It is important to manage the relationship between the business units and the IT area in decentralised organisations to avoid fragmentation arising from undesirable IT behaviour and to promote support for the IT activities (Waggener & Rickards, 2007; Meyer, 2006). Within the case studies the independence and influence of the faculties is such that they can be an obstacle to organisational change, including those changes related to the increased coordination and rationalisation of IT. In several of the case studies the relationship between the central IT areas and the faculties were less than desirable.

There is evidence to suggest that the ill feeling and mistrust is mirrored by the central IT areas in some cases. Although the central IT executive expressed concerns about the relationship with the faculties it appeared most significant in CS6. As is discussed in Chapter Seven all the case studies with the exception of CS6, have implemented measures to improve and better manage the relationship with the faculties.

The comment by the CIO at CS6 gives an example of the poor relationship that can exist between the faculties and the central IT area; "They're a feral bunch [faculty executive deans]. They always have been a feral bunch. He's [VC] determined to get some things done. There are a few people who are feeling a bit unhappy about that".

A selection of additional comments related to the faculty and central IT relationship are listed in Table 5.11 with an additional selection of comments shown in Appendix Eleven. As the comments indicate the relationship issues have arisen over a period of time and have led to undesirable faculty behaviour.

No.	Case Study	Position	Comment
1	CS6	DVC Administration	The faculties will be revolted by ISD [Central IT Department] taking control over their IT. That's why the satellite's developed because they [faculties] decided that they didn't want anything to do with ISD [Central IT Department] and so they set up their own systems and resources. This is why we've got a governance issue because even though the infrastructure committee doesn't go back that far even if it did those sorts of decisions wouldn't be made at the infrastructure committee level.
2	CS7	VP Resources	For the faculties it was about loss of power. For whatever reason there was a poor perception of the current central group capacity to deliver the right sort of client orientation that they feel is necessary. They [the faculties] feel that they have been burnt in the past.

Table 5.11: A selection of interview comments on faculty and central IT relationships.

5.3.5 Faculties and Organisational Change

The influence of the faculties appears to have been a major consideration in the progression of organisational restructures, including those related to IT in all of the case study universities. The CFO of CS3 gave a typical example; "Getting the support of the faculties was essential. On the strategy level that was a breeze. People were looking for change. They were looking for more opportunities for input. I think this whole governance structure appealed. We didn't get anyone saying no we just want the deans determining things, we're happy to be part of this process, we recognise there's a broad array of needs across the university and as long as we can have a voice that's fine. We kind of seduced them [the faculties] into it [restructure] by offering to fund the positions that they were currently funding".

A selection of additional interview comments demonstrating the importance of gaining the support of the faculties is shown in Table 5.12. Attempts to gain faculty support were evident in all cases.

As can be seen from the comments in Table 5.12, the opposition to restructuring by the faculties was varied but it was a factor considered in each case studies approach to change. Even in CS6 which has not undertaken any firm commitment to IT change beyond planning a review the need for agreement by the faculties on the best way to proceed was acknowledged. Despite the ultimate decision making authority of the VC in CS2 a previous attempt at change had been abandoned due to opposition by the faculties (see comment 1 in Table 5.12). In a later attempt under a different VC the change had been forced through with the agreement of the majority of faculties. This provides an example of the consequences that can arise through not placing significant weight on the influence of the faculties.

No.	Case Study	Position	Comment
1	CS2	CIO	In ’99 what happened was we called in Ericson they charged us a couple of million dollars to tell us how to move forward. Then when they put that material on the table at the university most schools attacked the figures. You counted him he’s only half time, he actually does half time. We don’t count those, we do it this way. Because they didn’t have enough time to do an absolute concrete check on the figures. So the culture here was immediately to deny the figures, attack the process to lose credibility and then once you’ve got that, then the Vice Chancellor says we’re not going to do it.
2	CS3	CFO	The faculties have come on board with this. There was a little more debate initially about sending their staff centrally and that’s why we decided to sweeten it to make it easier. There are huge benefits for the organisation in a coordinated approach to IT.
3	CS6	CIO	But in the absence of there being a burning bridge and typical of a university where even a CEO can’t state how things are going to be necessarily. He can’t tell people how things are going to be. You rely on people agreeing that this is the most sensible thing to do.

Table 5.12: A selection of interview comments on faculty support for change.

The Sandstone universities were more concerned with preserving the influence of the faculties and schools while achieving some of the efficiencies of closer cooperation.

A selection of interview comments related to the importance of preserving faculty innovation is shown in Table 5.13. The comments show that although the preservation of innovation was very important the advantages of a more centralized approach had been recognized. This is further discussed in section 5.4.3.

No.	Case Study	Position	Comment
1	CS7	VP Resources	We are a very devolved institution in management style, which isn't actually unusual for GO8 universities. A lot of research intensive universities nationally and internationally operate fairly devolved structures. Whilst we are devolved this is seen as a particular functional area that we need to bring in to at least have some better central co-ordination.
2	CS8	CIO	The colleges do have a lot of power. They look after the research as well as the teaching and manage the centre's of excellence that exist inside their colleges.

Table 5.13: A selection of interview comments on preserving faculty innovation.

In summary, the faculties in all the case studies were acknowledged by the IT executive to have a significant influence over IT reform attempts. In several cases the IT executive felt that IT reviews and restructures would not proceed or would be limited in their application if not accepted by the faculties. The more research orientated sandstone universities were careful to preserve the influence and independence of the faculties to facilitate research and innovation.

5.4 IT decision making

This section considers IT decision making in the universities participating in this study. The thesis topic considers the influence of user stakeholders on the IT governance planning and implementation process, IT decision making impacts on the thesis focus in

two areas: (i) the degree of influence the user stakeholders exert through being involved in the IT decision making; and (ii) the identification of those responsible for the making of the IT governance decisions. The identification of the IT governance decision makers is relevant to the 'IT governance decision makers' component of the research model and to research question 1 in being able to identify who is being influenced by the user stakeholders.

IT governance is very much concerned with who should make and contribute to decisions about all aspects of IT activities (Yanosky & McCredie, 2008; Weill & Ross, 2004a). One of the key elements of a successful IT governance structure is high level executive support for the IT governance process (Gillies & Broadbent, 2005; Hancock, 2005). This section outlines who the key IT decision makers are in the sample universities and how they interact. The degree of support provided by the strategic level management for the IT governance efforts is also discussed as it is one of the guiding mechanisms of IT governance (Gillies & Broadbent, 2005; Hancock, 2005) and may affect how IT governance is implemented, as considered in research question 2.

5.4.1 Background of IT decision making

All but one of the sample case studies has recently undertaken or has advanced plans to undertake a review in the near future of their IT activities and structures. Of these five had progressed to at least the implementation stage of a major IT restructure while one was still undertaking a review and one was shortly due to commence a major review. An estimate of the progress of the review at the time the research was conducted is shown in Figure 5.1. The determination of progression for each university was based on an assessment by the CIO of that institution. The scale used in Figure 5.1 is derived from the common steps in the review process as described by the CIOs.

Prior to the IT restructures and still evident in CS6 the sample universities IT structures had evolved as largely decentralised. The central IT areas had responsibility for infrastructure and large scale systems with many autonomous IT areas located in the

faculties and even at the school levels. This situation was consistent with the evolutionary IT process in universities described by Waggener (2010), McRobbie (2006), and Voloudakis (2010).

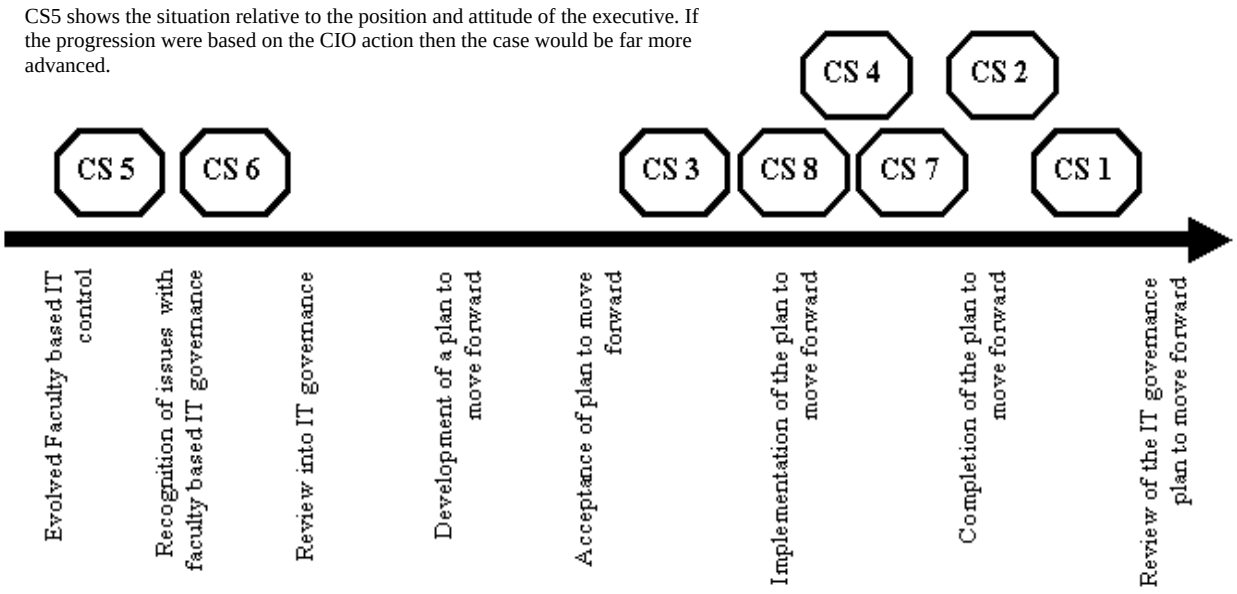


Figure 5.1: Progression of restructure of IT in sample universities.

Over time this situation resulted in a number of IT related issues that indicated the need for IT governance to be implemented, these included; (i) lack of accountability for control and expenditure related to IT activities; and (ii) duplication and inefficient use of resources; (iii) a lack of comprehensive IT risk management; and (iv) a lack of alignment of IT strategies with strategic business objectives. The motivation for review of the IT activities was recognition of serious deficiencies in the IT related activities, in two cases these issues were brought to prominence due to serious system failures.

The DVC Academic at CS2 commented on the lack of transparency and accountability that was evident prior to the IT restructure; “Everyone was holding me accountable and I realised I controlled twenty two million [dollars of IT assets] and there was another thirty million out there of which I have no control and people doing what they want”.

A selection of additional interview comments related to IT governance issues prior to the reviews is listed in Table 5.14. The comments were typical of all the participating universities. A selection of comments related to the principal drivers of the IT governance reviews is shown in Table 5.15. As can be seen from comments in Table 5.15, the drivers for change were the resolution of the issues that had arisen in the IT areas and to realise the benefits of a more centralised approach.

No.	Case Study	Position	Comment
1	CS1	VP Resources	There were cost savings but more importantly there were efficiency and effectiveness gains, which was even more useful to have. We now only have one IT sets of policies.
2	CS4	CIO	In the past people bought all sorts of different applications and bolted them all together. It's an absolute mess. Compliance with database technology – you've got half a dozen different versions and vendors and all sorts of stuff and it's just a mess.
3	CS6	DVC Administration	We are a highly devolved university especially when it comes to IT I don't know how you measure IT expenditure. That's one of the reasons for the review. It's one of the issues for the review because we don't know how much we spend on IT.

Table 5.14: A selection of interview comments on issues in IT governance.

Figure 5.2 displays the motivations, the change process, and the champions of the review and change process in each of the cases studied. The degree of change and the projected outcomes are based on the case studies projections. In all but one case there was strong executive support for the review and eventual implementation of IT governance. In the one dissenting case the executive support was more tentative and the changes were more limited and strongly driven by the CIO. Two of the cases studied, CS7 and CS8, consulted with individual level users during the change process. All seven cases that have implemented or are advanced in planning to implement IT governance consulted with users at the faculty level.

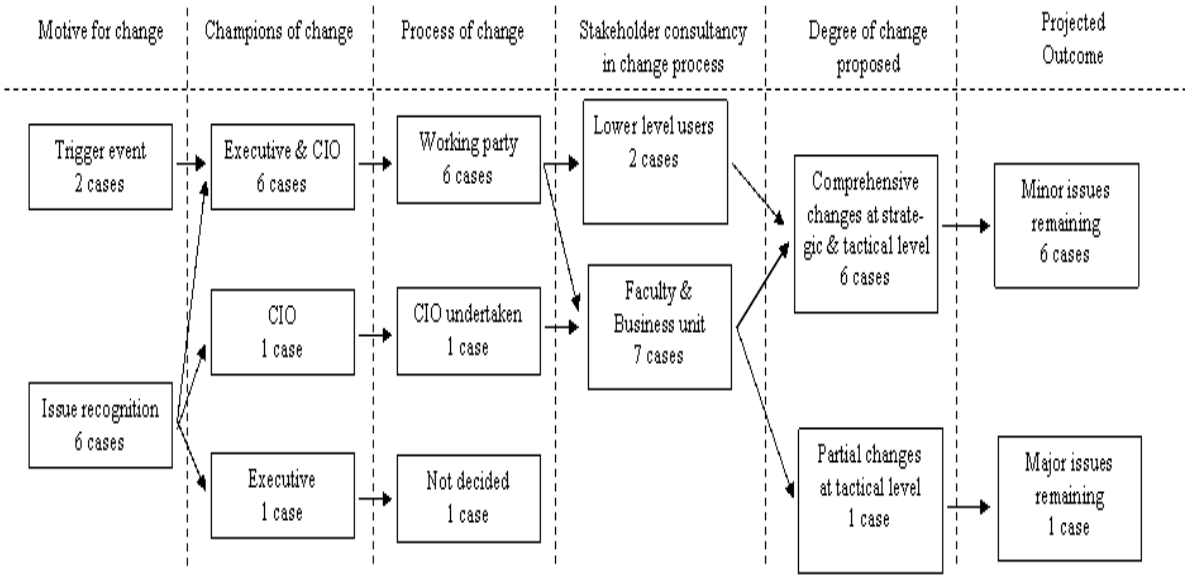


Figure 5.2: The IT review and change process.

The one exception was CS5 and in that institution the CIO believed a review should be undertaken but the executive appeared to be non-committed. Although no formal review had been pursued at the executive level the CIO had identified significant IT issues and had effectively championed and implemented a restructure to correct those issues. Executive approval had been granted for the restructure as proposed and justified by the CIO but the scope and progression of the changes is limited due to the lack of active executive support, which prevented change at the institutional level.

No.	Case Study	Position	Comment
1	CS1	CIO	"It was really the failure of the student system that actually triggered it [the review]. If we hadn't had that failure I wouldn't have been able to do what we did as quickly.
2	CS2	DVC Academic	Why did it [system failure] all go wrong? No IT governance. Nobody worried about control, checking systems or managing the risks. The systems started to collapse.
3	CS8	CIO	The idea being that we want to try and manage IT in this institution at an institutional level and have a good feel for it without constraining our activities or innovation or any of those things. But knowing our costs is something we all strive to but it's difficult when you're told it's not visible.

Table 5.15: A selection of interview comments on drivers of IT reviews.

The IT reviews undertaken were extensive, covering the ambit of IT activities across the institution and resulting in each case in far reaching recommendations for change that culminated in the implementation of IT governance. The IT governance structures proposed varied in terms of structural change and IT governance mechanisms implemented. This was particularly evident in terms of the degree of IT decision making that would be retained within the faculties. Although the IT review in CS6 had not yet commenced the Deputy Vice Chancellor Administration felt that little control should be retained within the faculties.

By comparison the revised structures in CS8 and CS7 retained a great deal of control in the faculties to facilitate research and innovation while still gaining a holistic approach to IT governance through increased coordination of the faculties IT activities by Central IT.

The case studies all share a similar history of the evolution of their IT activities. Ultimately this has resulted in a number of common issues emerging in the IT related activities that raised serious concerns about IT alignment with business goals, the efficient use of IT resources, and IT risk management. In all but one case these concerns have driven comprehensive and high level reviews into the IT governance structures in the case studies. These have resulted in wide ranging restructures of the IT governance process. The one exception has recognised the issues and is planning to commence a

review in the near future. User stakeholder consultation in the change process varied with only the more research orientated universities consulting with stakeholders at lower than the faculty level. All cases that have proceeded with reviews consulted at the faculty level.

5.4.2 Current status of IT decision making

Two of the eight sample universities, CS5 and CS6 had very little or no formal structure or process to make strategic IT decisions. CS6 plans to review its IT governance structure in the near future with a view to addressing the deficiencies that are perceived to exist. CS5 has no plans to review its IT process at the university level but strategic IT decisions are driven by the CIO including alignment of IT strategies with business strategies in the planning process.

Of the six other sample universities, two have strategic decisions made by the CIO and COO with final approval by the peak strategic business committee or Vice Chancellor respectively. These were CS3 and CS4, the New universities included in the sample, one of which was classified as small and the other as medium size in terms of student numbers. Both these institutions use high level committees but only in an advisory capacity to the individual IT strategic decision makers. They were among the four sample universities that reported ‘committee fatigue’ in their prior IT governance structures. Committee fatigue was where high level IT strategic committees had become ineffective due to a loss of focus and agenda’s cluttered with operational details and issues. This led to the original high level members delegating their attendance to staff not empowered to make the necessary strategic decisions and growing disinterest resulting in infrequent meetings and ultimately a loss of authority and confidence in the committee.

The remaining four universities in the sample had strategic IT decisions made by committees whose membership was drawn from executive business and IT staff. Ultimate approval of the committee decisions was with the peak strategic business decision making body chaired by the Vice Chancellor. Of these four universities two were

Sandstone and two were Unitechs. Three were of large size with in excess of 40,000 students enrolled and one was of medium size.

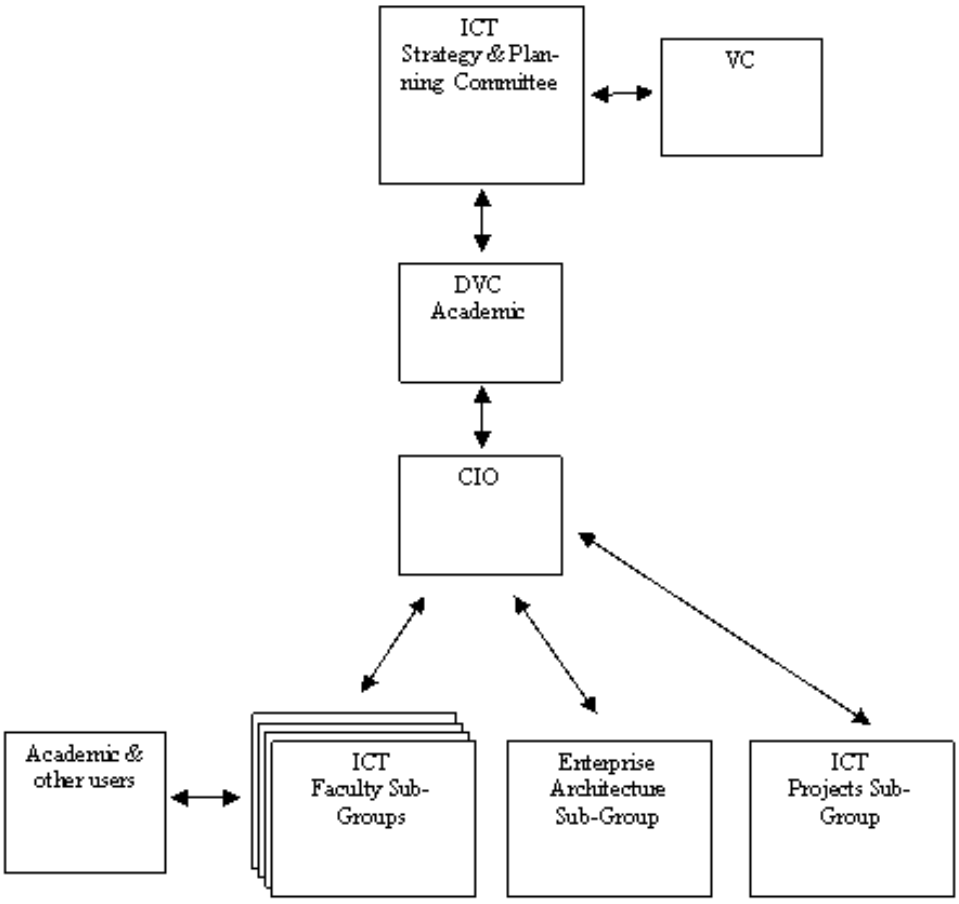


Figure 5.3: The centralised decision making structure of CS2.

Figure 5.3 above is an example of the more centralised IT decision making structure found in CS1 to CS5 inclusive. Each of these universities has individual variations in their decision making structure but the principle is similar in that the faculties participate through representation on the various user groups to the overall IT strategy as ultimately approved by the Vice Chancellors executive group.

Figure 5.4 below is an example of the more decentralised IT decision making structure as found in the Sandstone universities of CS7 and CS8. Again there are clear differences between the two structures but with a common point in that the Faculties formulate their own IT strategies which are then coordinated by the Central IT area under the guidance of the CIO. This retains a relatively high degree of IT decision making in the faculties in conjunction with a significant amount of the IT resources.

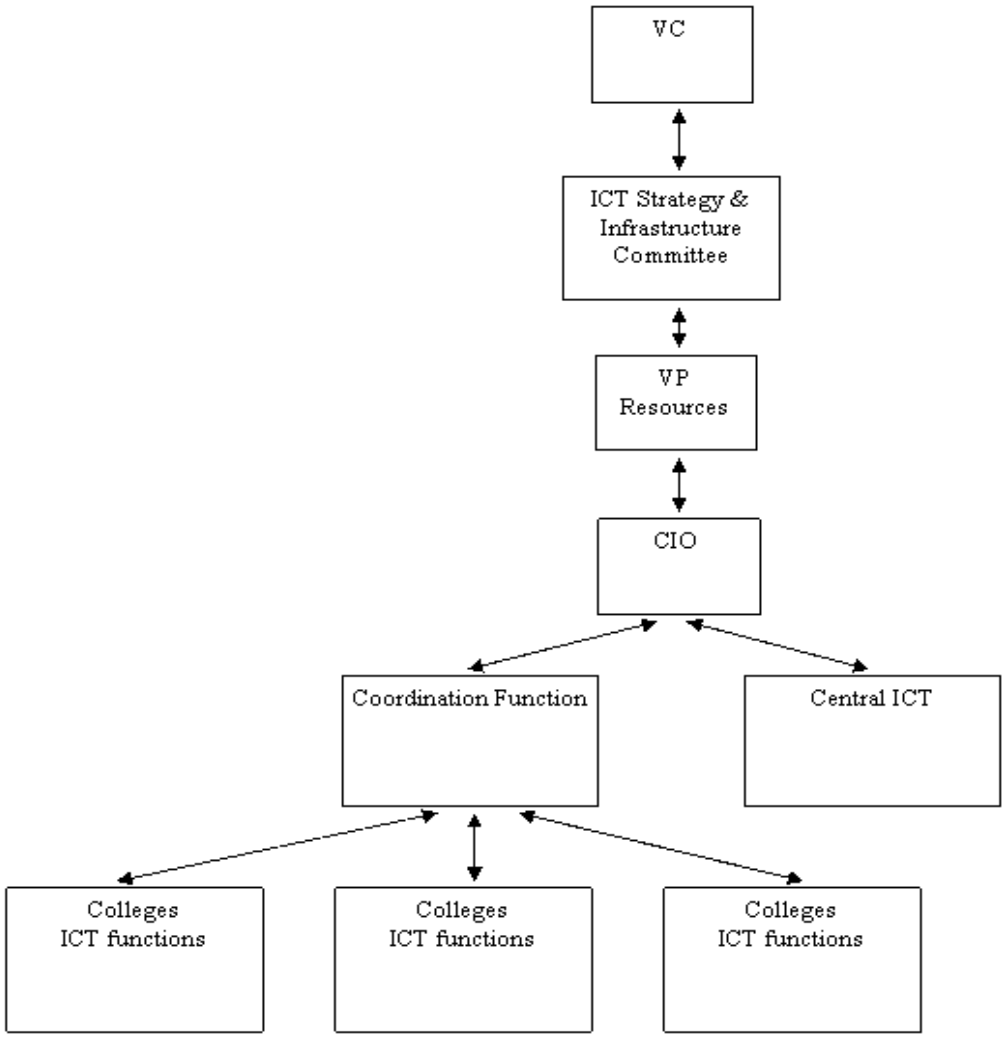


Figure 5.4: The typical decentralised decision making structure of CS7 and CS8.

CS6 although highly decentralised had little or no coordination between the faculties and the Executive Director of Central IT had no control over the faculty IT operations or strategies.

5.4.3 Centralisation of IT decision making

In the sample institutions that have implemented revised IT structures they have all undertaken a move to greater centralisation though not necessarily to a highly centralised structure. The resulting degree of centralisation in each case study can be seen in Figure 5.5. CS6 plans to do a review of IT but at the time of the research the review had not commenced. CS6 is the most decentralised IT structure of the sample universities with a great deal of decision making and IT resources being controlled by the faculties and business units. In this university there exists a high level of concern about duplication of services, lack of management of IT risk in the faculties, and inadequacies in overall IT governance across the campus.

The sandstone universities, CS7 and CS8, moved to a more centrally coordinated IT structure while retaining a significant proportion of IT resources under the faculty control. These structures were generally of a federated nature having largely decentralised IT functions but coordinated centrally. Similar to the views of Michalak et al. (1999) the universities see this structure as minimising fragmentation and other disadvantages of decentralisation while preserving the responsiveness and service levels characteristic of decentralised models.

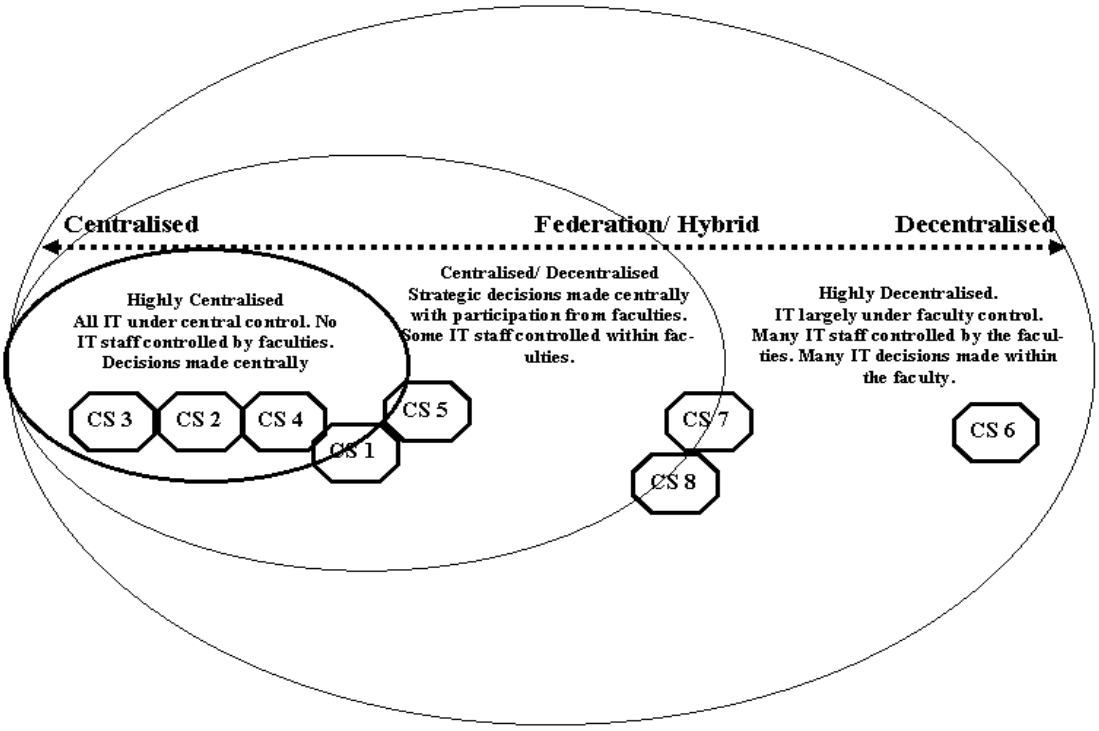


Figure 5.5: Degree of Decentralisation of IT decision making and resource control in sample universities.

The CIO of CS1 described the issues that provided the impetus to move to a more centralized structure; “What drove IT from a decentralised to a centralised approach was that we were so decentralised that we were too fragmented. From a budget perspective the schools or the faculties didn’t actually have the necessary budget to do what they wanted to do. From a technology architecture perspective nothing really talked to itself including the people”.

A selection of additional comments related to the drivers of centralisation is shown in Table 5.16. As can be seen from comment three in Table 5.16, the Sandstone universities advocated a less centralised IT governance to preserve innovation and research at the faculty level.

No.	Case Study	Position	Comment
1	CS3	CIO	It should improve response times but it should also get greater consistency in what we do and certainly more flexibility. It will enable me to design solutions and implement them without being held back by fractional groupings within the university.
2	CS6	Executive Director IT	But on the whole... from an IT perspective I would like to see more co-operation and more standardisation across the campus. I don't think centralisation is the answer, not the full answer. But I think there is more that can be done in terms of sharing what we do reducing duplications, handling risk management. It's ridiculous. They [the faculties] should be working together. …. The big area of concern I've got is [IT] governance. That is who actually makes decisions about IT.
3	CS8	CIO	We're not about trying to hand out pink slips anywhere as part of this process. It's more about saying look let's deal with the mundane in a place that people are good at dealing with bulk services. So we'll be the Woolworths or the place and do the bulk, you do the boutique stuff out there, you're good at the boutique and we're not we're in the middle. So you manage the boutique services and spend more of your time doing that because it's higher value to the individuals that you're providing services to in the area.

Table 5.16: A selection of interview comments on the centralisation of IT decision making.

As seen in the respective financial tables in sections 5.2.2 and 5.2.3 of this chapter, CS7 and CS8 had the two highest gross incomes, net assets, and by far the highest research expenditure. The pattern of strong research orientation and high levels of available resources is typical of the sandstone and redbrick institutions described by Marginson and Considine (2000). The IT structure of CS7 and CS8 corresponds to the multiple performance goals strategy outlined by Weill and Ross (2004b). The strategic focus is on responsiveness to users and fast innovation to foster research while enabling cost savings and better governance of resources through a hybrid blend of centralised and decentralised IT governance structure. CS6 also reported a high percentage of research expenditure out of total expenditure but lacked the financial resources of the Sandstone institutions. CS6 has not as yet commenced a planned IT governance review and its highly decentralised structure is an evolutionary phenomenon described by Weill and Ross (2004a) as feudal.

CS1 to CS5 inclusive have all opted for highly centralised IT governance structures with little IT resources retained under the control of the faculties. The common driving issues given for the IT restructures by the seven sample universities that have undertaken recent restructures were, better alignment of IT with business strategies, more efficient use of IT resources, cost savings, greater accountability, improved IT risk management, and better coordination of infrastructure across the university. Included in these broad categories were specific concerns such as unnecessary duplication and fragmentation of IT resources that had occurred in the more decentralised structures.

These issues were consistent with those identified by Waggener and Rickards (2007) and appeared the more important motivation for IT change in the categories of universities other than the Sandstone and Redbrick. As pointed out by Marginson and Considine (2000) these other categories of universities are less resource rich and more sensitive to the need for cost reductions and operational efficiency. The comparatively highly centralised universities in the sample although concerned with meeting the needs of constituents, such as researchers, had placed much emphasis on reducing costs and achieving operational efficiencies. Weill and Ross (2004b) labelled this strategy as 'operational efficiency' matching, as this study has found, a centralised governance structure.

CS7, one of the more decentralised universities still pointed to cost reduction and efficiency gains as being one of the key drivers of centralisation. A similar outcome was described in CS3, one of the more centralized universities. Several of the more centralized case studies expressed a common approach in that the relationship with the faculties would now be one driven by the needs of the faculties but implemented and controlled centrally.

The research has found that within seven of the eight sample universities there has been a trend towards centralisation over the last decade. This concurs with the findings of Voloudakis (2010), but rather than an evolution the move has been the result of a formal review process and adopted as a well planned strategy. CS5 did not have a formal executive level review but a CIO review that was approved by the executive. CS6 has not

commenced its review and the direction it will take in terms of centralisation is unknown at this stage.

In terms of the Voloudakis (2010) organisational model to describe IT service delivery the seven sample universities that have implemented revised structures have the characteristics of managed and planned systems. It would appear that the sample universities support Voloudakis' (2010) proposal that whether the structure is centralised or decentralised is not a determinant issue of IT governance. What is more significant is whether the structure is planned and implemented with appropriate support mechanisms to suit the selected structure. A contrast is provided by the CS6 University which is still showing symptoms of organic growth with apparent unaddressed issues of IT resource duplication, multiple IT standards, and non-standard infrastructure.

5.4.4 Key IT decision makers

In all the sample universities IT operational decisions are made within the central IT areas with exception reporting on serious operational issues being escalated to the executive. In the decentralised structures, faculty IT operational decisions are made within the faculty with central IT consulted if necessary. Decisions on technical matters were generally made by the central IT management with high cost decisions being approved at an institutional level by the strategic decision making body.

Six decision making archetypes can be used to describe where IT governance decisions are made (Weill & Ross, 2004a): (i) business monarchy – decisions are made by an individual or group of senior business executives, CIO may be included; (ii) IT monarchy – decisions are made by an individual or group of IT executives; (iii) federal – decisions are made by executive and business representatives of all operating areas, may include IT area; (iv) IT duopoly – decisions made by two parties in conjunction, business leaders and IT executives; (v) feudal – separate decisions are made at the business unit management level based on entity needs; and (vi) anarchy – Decisions are made separately by each individual user or small group of users.

In terms of Weill and Ross (2004a) CS3, CS4, and CS5 have IT strategic decision making structures consisting of an IT monarchy with final approval by a business monarchy. Consistent with this decision making archetype these three cases studies are highly centralised. This structure is tempered in CS3 and CS4 by the wide ranging representation on the advisory committees to the respective decision makers. These advisory committees, while not making decisions are acknowledged by the decision makers to be highly influential. The IT monarchy decision making structure was described by the CIO of CS3, "I do what I want to do. That's the reality of it because they are an advisory group [IT Steering Committee] only and they're very they reinforced that at the last meeting. That's what they see their role to be is to advise me. On that basis I only take things to them that I need advice on."

CS2, CS7, and CS8 exhibit characteristics of what Weill and Ross (2004a) described as federal with strategic IT decisions being made by committees consisting of representatives from the faculty executive and other operating areas. These categories are not absolute and have mechanisms in place to allow lower level constituents to have their voice heard in IT decision making. The CIO CS8 described the decision making structure as, "The chairs of those three committees now report directly into the vice chancellor. These committees have strong representation from the colleges. The chair for the university information and strategy committee will now be a dean of one of our colleges." CS1 has high level representatives from various groups of functional areas on the peak IT strategic decision making body but there is not individual representation from each of the faculties. Such a structure would tend to make its strategic IT decision making a 'business monarchy' with decisions being made by a group of senior business executives.

CS6 appears to be bordering on feudal with many strategic decisions being made independently by faculties and other business units. There appears to be insufficient central ITS coordination and responsibility for this structure to be classified as federal. The DVC Administration illustrated this with the comment, "There is no coordination between the executive deans. The closest that they get is through the Infrastructure

Committee. Each one is a member of the Infrastructure Committee. … There is not a specific IT decision making committee."

In summary, the key IT decision makers in the case studies can be categorised either into IT monarchy or federal IT decision making structures. There is one case that tends toward a business monarchy and one which appears to be feudal.

5.4.5 Support for IT decision making by strategic level management

The six sample universities currently undertaking reviews or restructures reported strong executive support for the changes. The CIO's considered that without such support the reviews would either not have proceeded or their recommendations would have been rejected or at best watered down.

The IT executive of the six case studies that had undertaken IT reviews considered that there had been strong support from the Vice Chancellor and the business executive for the reviews and ultimate restructures. The CIOs of these universities in particular all expressed appreciation of this support.

Five of these six universities felt that executive support in terms of funding and other resources for IT initiatives and ongoing operations was inadequate. In addition, the New and one of the Gumtree universities considered that the budgetary process used in their institutions were arbitrary and did not reflect the reality of meeting IT costs.

CS6, a university planning a comprehensive IT review believed that beyond the review executive support had not been strong, either politically or financially. CS5, the one university not pursuing a formal review or restructure, had strong financial support from the executive for the CIO driven changes that were justified through cost or efficiency savings. The CIO stated there was little executive interest in strategic IT and the executive involvement never exceeded passive support for the CIO.

The CIO of CS2 gave a common sentiment in the interview comment; “I am very happy with the support from the executive. When I went to P&MC to talk to six papers… I had six papers up. The VC called me in and said we’re not going to overrule you on anything”.

No.	Case Study	Position	Comment
1	CS1	VP Resources	There has been and is strong support from the Vice Chancellor for the changes in IT. I suspect while she was first here it was a potential source for cost saving as well.
2	CS5	CIO	The VP Resources is not that involved in IT but he obviously trusts what I’m doing. But other than issues with complaints which of course get escalated to him he is not that interested. He raises those sorts of issues but strategically no he’s not that interested.
3	CS7	VP Resources	I think the old [left two days prior to the interview] vice chancellor was very supportive of the changes and the review.

Table 5.17: A selection of interview comments on the degree of support by strategic level management.

A selection of additional interview comments related to the level of support for IT decision making is shown at Table 5.17. CS5 (see comment two in Table 5.17) received support but the restructure was more limited due to the disinterest of the VP Resources and the Vice Chancellor. Comments one and three were typical of the other seven cases studied. Overall the universities were generally happy with the degree of executive support for IT reviews and restructures but less satisfied with the support for ongoing operations, particularly from a resourcing viewpoint. The next section discusses the findings from the data presented in this chapter.

5.5 Discussion of findings from this chapter

This section discusses the findings from this chapter. This chapter found that user stakeholder input into the IT governance decision making at the planning and implementation stage was valued and actively sought at the faculty level. Only the two strongly research orientated and well resourced sandstone universities sought user participation at levels below the faculty level.

Figure 5.6 illustrates the drivers of centralisation. The higher status, more research orientated, Sandstone universities were found to be the most influenced by research orientation. Their IT governance structures were the least centralised with the express goal of better supporting research. As described by the CIO of CS8: “Why we leave a lot with the colleges is the institution is primarily one of research, as you would expect of one of the group of eight [top universities in Australia]. We do research and you can’t constrain research”. The Sandstone universities, CS7 and CS8, are more to the right side on the continuum illustrated in Figure 5.6. The other, more centralised universities, placed a greater priority on reducing costs as illustrated by the comment by the COO of CS4: “Centralisation was firstly cost related”. These universities are to the left of the continuum shown in Figure 5.6.

Figure 5.6: Drivers of centralisation in the universities studied.

Cost concerns in the cases studied were driven by the executive on a strategic level as was the importance placed on research orientation. The cost emphasis appeared to be

imposed and was not negotiable, where as research emphasis placed more importance on the participation and contribution of user stakeholders. The major concern of the faculties appeared to be retaining alignment of IT with their needs and objectives. The PVC of CS2 illustrated the concern with the comment; “We [the faculty] have been assured we will still have a voice and our needs will be addressed. Our researchers need IT, our teaching and learning needs IT”.

They saw centralisation and the associated implementation of IT governance as reducing the faculty control over IT activities and placing alignment at risk. The interviews with user stakeholders suggested that a poor relationship with the central IT area, in some cases, had fuelled the notion of loss of alignment. An example was given by the HOS in CS6, “We are just told what will happen, they [central IT area] have no idea how we work and what we need”. The IT decision makers were aware of the poor relationship with the faculties and recognised it as a potential barrier to implementing IT governance. Comments such as that by the CIO of CS2 indicated an awareness of the problem, “So the culture here [at the faculty level] was immediately to deny the figures, attack the process to lose credibility and then once you’ve got that, then the Vice Chancellor says we’re not going to do it”.

The reactions of the IT governance decision makers indicate that user stakeholders at the faculty level did have influence at three points in the IT governance planning and implementation process: (i) in gaining executive approval for IT governance to be implemented; (ii) when planning the mechanisms of IT governance; and (ii) in the ongoing operation of IT governance mechanisms. The university executive in each case studied stipulated that the proposed changes required support by the majority of faculties in order to proceed. The IT governance decision makers acknowledged the importance and associated power the requirement for support gave the faculties. The DVC Academic of CS2 gave an example with the comment, “Without them [the faculties] on side or at least most of them, it was made clear [by the VC] the changes [IT governance implementation] would not proceed”.

In terms of stakeholder theory the influence of the stakeholders is related to their respective salience as perceived by the decision makers (Boesso & Kumar, 2009; Mitchell et al., 1997). Salience consists of the stakeholder's legitimacy, urgency, and power (Mitchell et al., 1997). The IT governance decision makers have acknowledged the desirability of user stakeholder participation to ensure the approval, acceptance, and ongoing operation of the IT governance mechanisms. That is the stakeholders have legitimacy. The issues in IT activities that need to be resolved have given urgency to their resolution through the implementation of IT governance and in so doing have given urgency to the stakeholders who can aid in the implementation of IT governance. Power has been given to the user stakeholders at the faculty level through three sources: (i) indication by the executive that faculty support is required for the implementation of IT governance to proceed; (ii) the need for stakeholder support to enable the success of the ongoing IT governance process; and (iii) research is driven by the users and meeting their needs is a priority dependent on the research orientation of the university.

In terms of the thesis topic, which states in part "*a key factor in the planning and implementation of IT governance is the influence of user stakeholders which should be taken into account in the initial design and implementation of IT governance*" the findings of this chapter support the assertion. Further, the findings of this chapter confirm the first part of research question 1 that user stakeholders do have an influence on the planning and implementation of IT governance. In most cases studied the influence is exerted on the faculty level though in the more research and well resourced universities the influence is exerted at lower levels.

5.6 Chapter summary

The eight cases studied come from a variety of backgrounds and represent a range of different demographics, but have a similar history of evolution in terms of their IT governance processes. Several of the universities participating in the study have emerged from periods of financial stress that have limited the resources available for IT operations. The evolution of the IT activities has resulted in serious IT related issues. The

universities have become very cost conscious and to varying degrees this has lead to a strong cost control focus which has also impacted on IT activities and reviews of the IT structures.

User stakeholders were consulted at the faculty group level in the universities that had reviewed their IT activities. The more research orientated and better resourced universities were the only institutions to consult with users below the faculty level. Seven of the case studies have recently conducted comprehensive and high level reviews of their IT governance functions. In all of the seven the recommendations from these reviews have involved complete restructures with moves to implement more centralised structures based on the mechanisms of IT governance. The two Sandstone case studies were the most research orientated and although moving to more centralised structures the focus is on coordination of IT functions rather than direct control to preserve the research and innovation activities.

In all of the cases studied it was evident the faculties had significant influence and were an important consideration when attempting organisational change including restructures of the IT governance structures. The seven universities that have reformed or are in the process of implementing IT governance have done so only after gaining the support of the majority of faculties in their institution. The degree of centralisation was less pronounced in the strongly research orientated universities and more pronounced in the universities that expressed more concern about cost control. This finding is consistent with the findings of Weill and Ross (2004b).

The degree of centralisation did not appear to impact on the strategic IT governance structure or mechanisms espoused by the IT executive. The mechanisms used to implement IT governance did vary with the less centralised universities relying on coordination to achieve benefits arising from resolving the IT issues that had emerged rather than the direct control used by the more centralised case studies.

The demographics of the university, including size, financial resources and research orientation, impact on the governance structure in deciding what resources will be

dedicated to the IT governance process and where those resources will be allocated. For example, there is ample evidence to suggest that the strongly research orientated universities will adopt more devolved governance structures. Size of the university appeared to influence the operational decisions not the strategic level IT decision making structures.

The key IT strategic decision makers and decision making structures are instrumental in the initial design and ongoing implementation of IT governance. In particular, alignment with business objectives is in many ways dependent on executive involvement in IT planning and IT management involvement in business planning. There was strong executive involvement and support for the IT governance strategic processes, including the IT reviews that had recently been undertaken.

The findings from this chapter are further discussed in Chapter Eight, in conjunction with the findings from Chapter Six and Chapter Seven. The specific mechanisms of IT governance the universities participating in the study have adopted are discussed in Chapter Seven. The next chapter, Chapter Six, considers the user stakeholder involvement in IT governance and the user stakeholder's perception of the IT governance structure.

Chapter 6: Stakeholder influence and issues

6.1 Introduction

The thesis topic states that, "*one of the key factors in the planning and implementation of IT governance mechanisms is the influence of user stakeholders. These influences should be taken into consideration in the initial design and ongoing operation of the IT governance process*". This chapter addresses the influence of stakeholders on the ongoing operation of the IT governance process as described in the thesis topic. In addition research question 4 states, "*Do the expected outcomes of IT governance motivate user stakeholders to influence the mechanisms of IT governance planning and implementation.*" This chapter also considers whether user stakeholders value the outcomes they expect from IT governance and whether they attempt to influence the IT governance planning and implementation process to secure better outcomes.

The discussion of stakeholder influence includes their involvement in and perceptions of IT governance and the activities of IT within the functional areas of the universities studied. The data was gathered from the survey distributed to a sample of users at each case study site (as described in Chapter Four) and from interviews of various constituents in the universities participating in the research.

Section 6.2 discusses user stakeholder involvement in IT governance decision making in both centralised and decentralised IT governance structures. This is followed by section 6.3 which considers the user stakeholder perceptions and opinions of the IT activities in order to establish the extent to which users are participating in the IT decision making. The discussion in section 6.3 is later contrasted with the comments from the IT governance decision makers to confirm whether user participation is occurring as they believe. The findings from this chapter are then discussed in section 6.4 and summarised in section 6.5.

6.2 User involvement in IT governance

Several authorities in the literature point to user involvement as being a desirable IT governance mechanism serving several purposes including transparency of decision making and promoting realistic user expectations (Fernandez, 2008; Agee, 2005). Within the university environment there is a diversity of users with a wide range of needs, particularly in the core functions of teaching and research (Bucher, 2001; Braman, 2006).

For the purposes of this research, user relationship management is related to user involvement but can be distinguished as the formal mechanisms in place to promote good user relationships. It can involve a number of techniques including, but extending beyond, user involvement and for this reason is more appropriately discussed as a mechanism of IT governance in Chapter Seven. The benefits of user relationship management are similar to those of user involvement in IT decision making, specifically these include better communication, clarity of roles, more realistic user expectations, and better cooperation and coordination between IT and users at all levels (Agee, 2005; Bucher, 2001; Gillies, 2008).

6.2.1 User involvement in ongoing IT decision making

User involvement in IT decision making was considered desirable by the IT executive in all of the case studies. The main driver for engaging users in the IT decision making process appeared to be to improve alignment of the IT operations with the business needs and objectives. The CIO of CS3 expressed the use of consultation to support alignment, “I see the representatives of the various areas playing both an explicit and an implicit role in aligning IT strategy with the business objectives.”

The CIO of CS1 reflected the consultative approach common to all of the participating universities that had implemented IT governance, “We figured that we have to consult

with users otherwise it's going to be an IT led strategy where we don't want it to be IT led. We want it to be an IT informed strategy but not an IT led strategy."

The level of user to which involvement in the IT decision making process should be extended was somewhat contentious with CS4, CS5, and CS6 not concerned with user involvement below the faculty or equivalent level. The CIO of CS5 illustrated the reasoning behind the level of consultation with the comment, "I don't see any need in consulting lower levels of users about strategic planning. It's very difficult strategically to deal with researchers for example. As I said, we find it quite difficult to understand what they want because they all want something different."

The user consultation in CS5 occurred informally at the faculty executive level and was driven by the CIO. The other case studies were more receptive to user input from all levels, but used a variety of methods to achieve this engagement. Table 6.1 lists the main mechanisms used by the case studies to promote user participation in IT decision making.

No.	Mechanism for user involvement	Total	Unitechs Universities		New Universities		Gum Tree Universities		Sandstone Universities	
			CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
1	Forums on a regular basis to discuss a range of IT matters.	2	**Y**		**Y**					
2	Working groups on specific issues.	5	**Y**	**Y**	**Y**	**Y**			**Y**	
3	User representative on advisory committees.	4	**Y**		**Y**	**Y**				**Y**
4	Participative IT planning process.	6	**Y**	**Y**	**Y**	**Y**			**Y**	**Y**
5	IT subgroups in the faculty.	5	**Y**	**Y**				**Y**	**Y**	**Y**
6	IT executive meeting regularly with faculty executive.	3					**Y** informal		**Y**	**Y**

Table 6.1: Common mechanisms for user involvement in IT decision making.

The most widely employed mechanisms promoted ongoing participation at the faculty level. The most common mechanism was a participative IT planning process (see item 4 in Table 6.1), typically involving the use of faculty plans to develop the IT priorities.

User participation is discussed on the basis of decentralised and centralised IT structures in section 6.2.2

6.2.2 User participation in decentralised universities

The literature expounds that decentralised IT structures will be more responsive to individual user needs (Miller, 2002; Weill, 2004). This would suggest that decentralised decision making processes are more likely to involve the various constituents at all levels or at the very least be more in tune with their needs (Waggener & Rickards, 2007). CS6 did not appear to be more successful in involving users in the IT decision making process than the centralised universities. The CIO of CS6 indicated the lack of effective user participation, "I see the need for them [the faculties and users] to be involved in IT decisions but how do they do it currently? It's a good question. I would guess that it is done through the one or other of the deputy vice chancellors depending on the area concerned. … There is little faculty input into central IT decisions and little input from central IT into faculty IT decisions."

CS8 and CS7, the Sandstone Universities, have placed much emphasis on the need to be more successful in fostering user participation. This is consistent with the prime reason these universities have maintained decentralised structures, namely to continue to be more responsive to user needs (as discussed in Chapter Five). Responding to user needs appeared to be an area of governance that continued to be a work in progress with both CS7 and CS8 describing user participation as an emerging structure. The CIO of CS7 made this clear, "If you take the three layers: strategic management, operational management, operations – the connections at the top of the university are pretty good. All roads do actually lead to Rome but the layers below that, the co-ordination function are fundamentally missing. So all the things that you would do to align strategic plans create quality operations and all of those things at the next two layers are missing. These are the areas we are working on."

CS6 also acknowledged the vast amount of work required in this area as with most areas of its IT governance structure but has no firm plans in place to address the situation. Both the CIO of CS8 and the CIO of CS7 pointed out that the future direction of user involvement needed to be supported by greater coordination and cooperation between the decentralised areas. The comment by the CIO of CS8 illustrated the need, "The idea is that they [colleges] have got to link together a bit closer than perhaps they are at the moment. The structures about users I think will again evolve slowly."

CS6 had a decentralised structure as a result of what Voloudakis (2010) described as an evolutionary and 'organic' process and not a planned implementation. In this case study, user involvement had been recognised as important but decentralisation was not in place in an effort to be more responsive to user needs. The situation in CS6 appeared to border on almost independent central and faculty IT decision making described by Weill and Ross (2004b) as 'feudal'.

The two Sandstone case studies have planned more decentralised IT structures. They acknowledge the importance of user participation in IT decision making and have made provisions in their revised IT structures to promote such involvement, particularly through greater coordination of the faculty IT strategic and operational planning. This coordination involves both the faculty IT management and the faculty executive. User involvement below the faculty level is largely the responsibility of the decentralised faculty areas.

6.2.3 User participation in the centralised universities

Centralised IT structures tend to be more cost and resource efficient and better able to align with the university strategies (Waggener and Rickards, 2007). A strong criticism of centralised structure is they struggle to meet the needs of the faculties and lower level users (McRobbie, 2006; Waggener & Rickards, 2007).

The five more IT centralised universities in the research sample all acknowledged the desirability of more user involvement in IT decision making, as for example described by the CFO of CS3, "The governance is centralised but the ideas and consultation is really quite decentralised. I'm pushing it right out to the enterprise to tell us what they want to do."

Despite the recognition only three, CS1, CS2 and CS3, had formal mechanisms in place to facilitate such involvement. These mechanisms included working groups, IT subgroups in faculties, regular user forums, and a participative IT planning process. A description of the type of mechanisms in use was given by the Director of Information Management in CS4, "You have one to one sessions with people and you have one to many sessions so you have focus groups, you have faculties, you have business areas. You try and break down the whole organisation into component logical parts and then speak to them as a group or as individuals depending on what it is you're actually discussing at that moment in time."

The mechanisms used in respect of user participation overlap. For example, the role of committees and forums in CS1 overlap as they are used to refine and confirm each other. The majority of centralized case studies complemented their formal mechanisms for user participation with informal sources of user input such as feedback from IT staff assigned to the faculty areas.

CS4 and CS5 were the two centralised universities with limited mechanisms for user involvement and these were largely informal and ad-hoc. These two case studies relied on informal consultation with users and for CS4 users indirectly represented on IT decision making bodies, through their executive. In both these case studies user participation through the informal mechanisms was used in situations related to specific decisions and initiatives rather than on an ongoing basis.

The centralised cases tended to attempt user participation at lower levels through several mechanisms, such as forums, reaching down to individual researchers and other users. Despite these attempts it was clear that the emphasis was on user involvement at the

faculty level. CS5 and, to a lesser extent, CS4 made no effort to gain involvement below the faculty and business unit level. As discussed in Chapter Five, these case studies that have all moved to highly centralised IT structures as the result of recent reviews did so only after reassuring the faculties that they would have input. Such reassurance may also explain at least in part the efforts by these case studies to promote user participation in their new IT governance structures.

6.2.4 Challengers to user involvement

Although the case studies recognise the importance of user involvement in IT decision making and have implemented many mechanisms to give users a meaningful voice, there was an acknowledgement from the respective IT areas that there still existed many challenges. The IT executive in each case study had experienced undesirable outcomes that can result from a IT governance structure that neglects user input and needs. The most often mentioned were a lack of alignment with the business strategies on the faculty level and undesirable behaviour and fragmentation occurring in the faculties.

There were three common challenges to user involvement highlighted through the case study interviews:

- Apathy among users with indications many users were not interested in IT matters and did not wish to be involved in participation or even though interested in IT matters could not be bothered participating. An example was given by the COO of CS4, “We get user involvement but I guess the reality is that there are very few users who understand the importance of IT to their research work and participate and contribute to IT governance. There’s a lot more that just don’t make that contribution. So our efforts to get effective input from the faculties are sometimes compromised a bit by that.”

- Committee fatigue occurring in committees originally designed to promote user participation. In these situations the committees suffer from a lack of defined

purpose and meaningful, strategic level agendas. This leads to a lack of meaningful decision and discussion which in turn results in disinterest and non-attendance by the selected representatives. An example was given by the CIO of CS8, "I think the committees changed over time. The decision makers found the meetings over long and with agendas that became irrelevant so they would send delegates who were not empowered to make decisions, in turn this would add to the problem until the committee became pointless."

- The identification, implementation and maintenance of mechanisms that would generate user interest. In addition, the mechanisms need to be able to provide the information sought by the IT area and be in a usable form. The CIO of CS6 gave an example, "Very often a lot of the strategy is determined by people at the bottom who then move it up. We [Central IT] don't link into that. Yes we should but not yet. It difficult to determine how that will occur."

A selection of interview comments relating to challenges to user involvement is shown in Appendix Twelve. To overcome these problems the case studies have incorporated a number of different mechanisms into their revised governance structures. For example, CS3 has adopted a structure that relies heavily on user input through ongoing forums and representation on committees and advisory groups setup with a limited mandate of advising the CIO on specific issues. These groups have no decision making or budgetary power.

6.2.5 User perception of involvement

Table 6.2 shows survey responses on user involvement in operational and strategic IT decision making. The level of involvement in business decision making is included for comparison purposes. 53% of respondents reported no involvement in IT strategic decision making compared with 37% that had no involvement in strategic business decisions. In respect of operational IT decisions 42% had no involvement while 29% reported no involvement in operational business decisions. There were also more

respondents (52%) reporting they were aware or informed about business strategic decision making than for the same category (40%) of decision making for IT issues. This trend was followed in respect of operational business decisions with 58% reporting they were aware or informed and 49% stating aware or informed for operational IT decisions. The aware and informed categories reflect on the level of transparency in the decision making process. From this it is evident that there is more transparency in the business decision making process than for the IT decision making.

		Level of Involvement in Decision Making			
No.	Decision type	None	Aware	Informed	Participates
1	Operational Business Issues	29%	32%	26%	13%
2	Strategic Business Issues	37%	30%	22%	11%
3	Operational IT Issues	42%	29%	20%	9%
4	Strategic IT Issues	53%	28%	12%	8%

Table 6.2: User involvement in decision making.

The Sandstone universities, CS8 and CS7, reported higher levels of user participation in IT strategic decisions of 12% and 16% respectively, compared to 11% overall. Respondents for both these case studies also reported a lower level of 'no involvement' than the other universities.

The responses for the following questions were based on a 5 point Likert scale, with 5 being strongly agree and 1 being strongly disagree. In response to the survey question: "I am generally satisfied with IT support for my area at the operational level", the average level of satisfaction was 3.29 on the 1 to 5 scale. For the same question referring to support at the strategic level the average response was 3.04. Respondents across all universities reported much higher satisfaction with faculty level IT areas than with the central IT area. This applied irrespective of whether the faculty areas were controlled by the central IT area or were controlled by the faculties themselves. The survey responses

suggested that the central IT structure at the Universities is perceived slightly better than neither satisfied nor dissatisfied.

Overall, only 9% and 8% of respondents felt they participated in operational and strategic IT decision making respectively. Over half of respondents reported no involvement in strategic IT decision making and 42% with no involvement in operational IT decision making. It would appear from this that the efforts to involve users in strategic IT decision making have not as yet been effective. The survey results suggest that the faculty areas are more responsive to user needs, which is consistent with the relationship issues between the central IT areas and the faculties as is discussed in Chapter Seven.

6.3 User perceptions and opinions of IT activities

IT user perceptions and opinions are the building blocks of the user relationship at all levels with the IT area. As such they are important to the IT governance function as they can be a symptom of a lack of communication and transparency in the IT function which can lead to abhorrent user behaviour and problems in alignment with the faculty level strategies (Bucher, 2001; Gillies, 2008).

IT user perceptions and opinions relate to research questions RQ3 and RQ4 and the research model component of user influence on the IT governance function and mechanisms.

6.3.1 Survey respondent profile

The survey was distributed to the faculty of business or equivalent faculty in each of the case study universities. Details of the background of the respondents are shown in Appendix Six. Academic staff accounted for 80% of those completing the survey with 87% of those being involved in both teaching and research. The respondents therefore

represent a cross section of staff able to comment on the range of user stakeholder functions involving the use of IT.

Table 6.3 shows the frequency of applications used by respondents with Table 6.4 showing the level of satisfaction with each of the applications and categories of applications used by university type. The usage level shown in Table 6.3 does not reflect the amount of time using the application but the frequency of usage rated from never to always. The three categories of administration, teaching, and research are all used on average occasionally to often with the exception of the New universities which used research applications on a rarely to occasionally basis. The Sandstone case study universities tended to have higher usage of both teaching and research applications than the other categories of universities. The figures shown in Table 6.3 represent an average usage within a range of one to four with the higher the figure indicating the more often used.

Scale used in Table 6.3				
Never	**Rarely**	**Occasionally**	**Often**	**Always**
1	**2**	**3**	**4**	**5**

	Unitechs	New	Gum Tree	Sandstone	Average
Admin.	3.89	3.98	3.95	3.82	3.91
Teaching	3.63	3.82	3.59	3.87	3.73
Research	3.25	2.85	3.06	3.36	3.13
Overall	3.59	3.55	3.53	3.68	3.59

Note: the higher the figure the more often used.

Table 6.3: Average usage of applications by categories and university type.

As shown in Table 6.4 respondents from all university types reported similar levels of satisfaction with all three categories of applications with the average response of neutral to satisfied indicated. The Sandstones had the highest level of satisfaction with teaching and research applications but the lowest with administrative applications.

Scale used in Table 6.4				
Very satisfied	**Satisfied**	**Neutral**	**Dissatisfied**	**Very dissatisfied**
1	**2**	**3**	**4**	**5**

	Unitechs	New	Gum Tree	Sandstone	Average
Admin.	2.17	2.39	2.31	2.57	2.36
Teaching	2.22	2.39	2.50	2.09	2.30
Research	2.42	2.64	2.49	2.13	2.42
Overall	2.27	2.47	2.44	2.26	2.36

Note: the lower the figure the more satisfied with the application.

Table 6.4: Average satisfaction with applications by categories and university type.

Table 6.5 below shows the average hours per week respondents spent using the computer for the purposes listed. On average, just over forty six hours each week is spent using computers either on campus or at home. The use which accounts for the most time each week was research, followed by teaching. As suggested by Marginson and Considine (2000) the Sandstone universities appear to be more research orientated. These universities had the highest use of computers for research with nearly eighteen hours per week of computer time being spent on research. The next highest were the Unitechs with almost fifteen hours per week of computer time being spent on research. Computer time devoted to teaching activities was fairly constant between the case study universities with the highest being new universities at over fifteen hours per week. The Sandstone case study universities had the lowest amount of computer time dedicated to administration.

	Teaching Admin.	Teaching	Research Admin.	Research	Other Admin.	Other	Total
Unitechs	7.93	12.11	3.65	14.95	7.75	1.65	48.04
New	11.46	15.54	3.19	11.16	8.47	0.77	50.59
Gum Tree	7.12	11.06	1.81	12.10	8.93	0.57	41.59
Sandstone	4.88	11.62	2.46	18.94	4.88	2.16	44.95
Average	7.85	12.58	2.78	14.29	7.51	1.29	46.29

Table 6.5: Average computer use by function and type of university in hours per week.

On average respondents spent 32% or approximately fifteen hours per week of their computer time working at home with 67% spent on campus and the remainder in other

locations. The high usage figures illustrate the importance and level of reliance university academic staff in particular has on computers and related applications to undertake the core aspects of their work.

Ten of the questions in part G of the survey were designed to establish the survey respondent's attitude and perception of IT in their university. These questions and the respective responses are shown in Table 6.6 below by university and case study. On average they indicate users have a positive attitude to technology and are happy to try new technologies in their work. It would also appear that respondents are very positive about using technology and recognise the importance of technology in the completion of their duties.

There was on average a negative response to the questions about awareness of strategic and operational IT issues within the respondents respective university. Respondents felt they were more aware of operational IT issues than strategic IT issues. This was true of all university types except the Sandstone case study universities which had a neutral and a slightly positive level of awareness respectively.

Respondents were asked if they were aware of the basic IT structure implemented at their university. If the university had a centralised IT structure then the question asked the respondent to indicate their level of agreement with the statement, "My University uses a centralised IT structure". If the university had a devolved IT structure then the question asked the respondent to indicate their level of agreement with the statement, "My University uses a devolved IT structure". A positive response suggested an awareness of the basic IT structure of the respondent's university. On average there was a negative response.

Scale used in Table 6.6					
Does not apply	**Strongly disagree**	**Disagree**	**Neither disagree or agree**	**Agree**	**Strongly agree**
0	**1**	**2**	**3**	**4**	**5**

		Unitech		New		Gum Tree		Sandstone		
No.	**Question**	**Case 1**	**Case 2**	**Case 3**	**Case 4**	**Case 5**	**Case 6**	**Case 7**	**Case 8**	**Average**
G1	I am generally comfortable with using information technology.	4.10	3.98	4.21	4.38	4.24	4.25	4.50	4.50	4.24
G2	I am very aware of operational IT issues in the university.	2.79	2.80	2.64	2.74	2.10	2.54	3.00	3.12	2.74
G3	I am very aware of strategic IT issues in the university.	2.43	2.41	2.09	2.57	1.71	2.18	2.97	2.77	2.41
G4	I am happy to try new computer programs that may assist in my teaching duties.	3.03	3.41	3.35	4.42	3.57	2.67	3.16	3.62	3.38
G5	I am happy to try new computer programs that may assist in my research activities.	3.14	3.47	3.52	4.04	3.52	3.46	3.32	4.04	3.54
G6	I am happy to try new computer programs that may assist in my administrative duties.	3.21	3.40	3.55	4.33	3.67	3.46	3.97	3.42	3.59
G7	In my opinion IT is important in my teaching activities.	3.24	3.73	3.58	4.46	3.71	2.93	3.26	4.35	3.64
G8	In my opinion IT is important in my research activities.	3.79	3.75	3.68	4.04	3.52	3.48	3.71	4.69	3.82
G9	In my opinion IT is important in my administrative duties.	3.86	3.72	3.81	4.42	3.86	3.57	4.13	3.92	3.88
G12	My university IT structure is centralised/ devolved.	2.71	3.07	2.64	3.38	1.48	3.33	3.19	3.04	2.89
	Weighted Average	3.23	3.37	3.31	3.88	3.14	3.19	3.52	3.75	3.41

Table 6.6: User attitude to IT.

Survey recipients were asked to nominate the methods by which they were kept informed of operational and strategic business issues and operational and strategic IT issues at their respective institutions. The detailed responses are shown in Appendix Six, with Table 6.7 showing the summarised results excluding the category 'word of mouth'. 'Word of mouth' has not been included in the summary Table 6.7 as it is not considered to be a reliable, organised, or formal method of information dissemination. In each case study and overall there are a number of sources of information dissemination ranging in order from operational business issues, strategic business issues, operational IT issues, to strategic IT issues. In all issue classifications email updates was nominated as the most common method of keeping respondents informed. Websites and information sessions also ranked in the top four most common sources of information for all categories.

The Sandstone case study universities reported the highest number of information sources in all four categories of operational and strategic business issues and operational and strategic IT issues. The next highest were the Unitechs followed by New Universities with the lowest in all categories being the Gum Tree institutions.

Description	Unitech	New	Gum Tree	Sandstone	Overall
Total sources excluding word of mouth	883	520	427	763	2593
Average sources all categories per respondent	10.6	9.2	8.8	13.0	10.4
Total sources operational business	228	132	97	194	651
Total sources strategic business	238	150	106	189	683
Total sources operational IT	222	119	127	189	657
Total sources strategic IT	195	119	97	191	602
Average sources per respondent for operational business	2.7	2.3	1.9	6.6	3.4
Average sources per respondent for strategic business	2.9	2.6	2.2	3.2	2.7
Average sources per respondent for operational IT	2.7	2.1	2.6	3.2	2.7
Average sources per respondent for strategic IT	2.4	2.1	2.0	3.3	2.5

Table 6.7: Summary of information sources excluding word of mouth.

The profiles established through the relevant portion of the survey suggest that on average users have a positive attitude to technology and using technology in their work. Despite any efforts to the contrary on average respondents felt they were not well informed of either IT operational or strategic issues at their respective universities. This was supported by the negative response to a basic question concerning the IT structure in place at the respondent's university. Efforts to inform constituents of operational and strategic IT issues were perceived to be less than those to inform them about strategic and operational business issues. Sources of information were the least in number for all case studies for strategic IT issues.

6.3.2 User satisfaction with IT activities

Table 6.8 below displays the survey responses on user satisfaction with various aspects of IT activities by case study universities. Satisfaction with operational IT support had an overall average positive response, with all other categories, including questions related to business support, having an overall average negative response.

As a comparison there was a higher level of satisfaction with IT support at the operational and the strategic level than with the satisfaction with support from the university executive at either the operational or strategic level. Respondent satisfaction with strategic and operational IT was positive in the Unitechs and the Sandstone universities as was the satisfaction with the support from the central IT area. Responses from the Gum Tree universities were negative in both these categories. The questions related to satisfaction with support from the central and faculty IT areas was not included in the survey questionnaires distributed to CS3, these responses are marked n/a and have been excluded from any related calculations.

Scale used in Table 6.8					
Does not apply	**Strongly disagree**	**Disagree**	**Neither disagree or agree**	**Agree**	**Strongly agree**
0	**1**	**2**	**3**	**4**	**5**

		Unitech		New		Gum Tree		Sandstone		
No.	**Question**	**Case 1**	**Case 2**	**Case 3**	**Case 4**	**Case 5**	**Case 6**	**Case 7**	**Case 8**	**Average**
G10	I am generally satisfied with IT support for my area at the strategic levels.	3.04	3.00	2.67	2.09	1.90	2.08	3.81	3.40	2.75
G11	I am satisfied with the computer hardware available for teaching purposes.	2.92	3.16	2.68	2.61	2.24	2.00	2.77	2.77	2.64
G13	I am satisfied with IT support for my area at the operational level.	3.29	3.71	3.09	2.13	2.85	2.80	3.84	3.46	3.15
G14	I am satisfied with the support for my area from the executive at the strategic level (not IT related).	2.66	2.86	2.39	2.04	1.43	2.76	3.56	3.04	2.59
G15	I am satisfied with the support for my area from the executive at the operational level (not IT related).	2.82	2.91	2.61	2.30	1.67	2.96	3.28	3.04	2.70
G16	My satisfaction with IT support for teaching related applications has increased over the last 3 years.	2.91	2.80	2.45	2.57	2.50	2.08	2.62	2.73	2.58
G17	My satisfaction with IT support for research related applications has increased over the last 3 years.	2.61	2.79	2.31	2.22	1.86	2.08	2.87	3.04	2.47
G18	My satisfaction with IT support for administration related applications has increased over the last 3 years.	3.05	3.10	2.73	2.30	1.85	1.90	3.34	2.88	2.64
G25	I am satisfied with the IT support & services from the faculty IT area.	3.21	3.30	n/a	2.04	1.57	2.38	3.69	3.62	2.83
G26	I am satisfied with the IT support & services from the central IT area.	3.03	3.20	n/a	2.26	2.19	2.08	3.50	3.16	2.77
	Weighted average	2.95	3.08	2.09	2.26	2.01	2.31	3.33	3.11	2.71

Note: Calculations exclude fields designated does not apply.

Table 6.8: User satisfaction with aspects of IT.

6.3.3 Perceived and potential use of IT

The research survey questions related to the perceived and potential use of IT are listed in Table 6.9 below as are the average responses by case study universities. These questions reflect the respondent's attitude to the level of resourcing and training in the use of IT in the core business functions of research and teaching. Questions G21 and G24 relate to whether users believe IT in these areas would benefit in terms of effectiveness by more consultation with the constituents who will use the applications.

The New universities and case study eight indicated on average that they agree to strongly agree with all the statements related to the effectiveness of the perceived and potential use of IT. Overall there was general disagreement that additional financial resources for IT would improve teaching but slight to moderate overall agreement that additional financial resources would assist in the effective use of IT for research related purposes. There was also overall agreement that training and increased consultation with users before acquiring IT applications would aid in their effectiveness. The strongest agreement by university type was in the New universities followed by the Sandstone, then the Gum Trees with the least agreement in the Unitechs.

Scale used in Table 6.9					
Does not apply	**Strongly disagree**	**Disagree**	**Neither disagree or agree**	**Agree**	**Strongly agree**
0	**1**	**2**	**3**	**4**	**5**

		Unitech		New		Gum Tree		Sandstone		
No.	**Question**	**Case 1**	**Case 2**	**Case 3**	**Case 4**	**Case 5**	**Case 6**	**Case 7**	**Case 8**	**Average**
G19	The effectiveness of my teaching would be improved by additional financial resources for IT for teaching related applications.	2.36	3.07	3.03	3.74	2.33	2.85	2.90	3.31	2.96
G20	The effectiveness of teaching would be improved by additional IT training for teaching staff.	2.36	3.16	3.06	3.78	3.71	2.92	3.00	3.23	3.12
G21	The effectiveness of IT applications used in teaching would be improved by increased consultation with academic staff before acquiring teaching related applications.	3.07	3.42	3.61	4.04	3.81	3.19	3.03	3.73	3.45
G22	The effectiveness of research would be improved by additional financial resources for IT for research related applications.	2.89	3.29	3.26	3.57	3.38	3.31	3.13	3.54	3.28
G23	The effectiveness of research would be improved by additional IT training for staff.	2.93	3.14	3.42	3.61	2.71	3.15	3.19	3.42	3.20
G24	The effectiveness of IT applications used in research would be improved by increased consultation with academic staff before acquiring teaching related applications.	2.96	3.32	3.48	3.70	2.81	3.44	3.16	3.42	3.29
	Average	2.76	3.23	3.31	3.74	3.13	3.14	3.07	3.44	3.22

Table 6.9: User perceived effectiveness of IT.

Respondents were asked to indicate whether various issues were very important, important, or not important in the short or long term. The lower the average response the more important the issue was rated with a rating of one being very important to the minimum rating of three being not important.

Overall, improving user support and acting on user feedback were the second and third most important short term IT related issues selected by respondents. Expanding IT use in administration was the least important short and long term IT issue selected by respondents on average. This may be an extension of the negative attitude towards what respondents saw as an increasing bureaucracy that was using IT to add to their workload. This sentiment was reflected in several user interviews and in a number of comments attached to completed surveys. Reducing bureaucracy was rated important to very important in both the short and long term general business issues. The higher importance given to acting on user feedback as compared with seeking user feedback may suggest there is perception among respondents that feedback is being collected in some cases but is not being acted upon in any discernable way.

6.3.4 User involvement in IT decision making

Part F of the research survey related to the constituents involvement in the operational and strategic decision making for both IT and general business decisions. Respondents were requested to indicate their level of involvement in each category of decision making from four options, none, aware, informed, and participative. A descriptor accompanied each level of involvement to encourage consistent interpretation. The average level of user involvement by case study is shown in Table 6.10. A user involvement level of one indicates no involvement ranging to the maximum value of four for participation in that decision type.

		Level of Involvement in Decision Making			
	Type	**Operational Business Issues**	**Strategic Business Issues**	**Operational IT Issues**	**Strategic IT Issues**
CS1	Technology Universities	2.30	2.14	2.10	1.75
CS2		2.54	2.40	2.20	1.66
CS3	New Universities	1.84	1.75	1.65	1.59
CS4		2.09	1.90	1.85	1.81
CS5	Gum Tree Universities	2.44	2.35	2.10	1.65
CS6		2.32	2.19	2.00	1.60
CS7	Sandstone Universities	2.31	2.16	2.09	1.97
CS8		2.10	2.04	2.00	1.88
	Average	2.24	2.12	2.00	1.74

Table 6.10: Average Level of User Involvement in Decision Making.

In each case study respondents indicated a declining level of involvement across the range of decision types of operational business, strategic business, operational IT, and strategic IT issues. For strategic IT issues the level of involvement for every case study was between none and aware. The Sandstone universities had the highest level of involvement for strategic IT decisions while the Unitechs had the highest level of involvement for operational IT issues. The New universities rated the lowest level of involvement in all decision types for both business and IT.

The next section considers the data presented in this section and discusses the findings that can be drawn in relation to the thesis topic and research questions.

6.4 Discussion of findings from this chapter

The identification and inclusion of stakeholders in the strategic IT decision making was evidenced in the seven case studies that had reviewed IT and implemented IT governance. The CIO of CS4 stated a sentiment expressed in all the seven restructured case studies: “Previously there’s been no mechanisms to meet everyone’s needs. Users in

particular, but also the DVC and VC, with accountability, risk management and expenditure issues".

This research found that the purpose of the revised IT governance structures in the case studies examined were, in many ways, to create as much IT value as possible for the key groups of stakeholders identified (see section 6.2), including user stakeholders. The IT governance structures introduced several mechanisms designed to keep the interests of the stakeholders aligned and progressing in the same direction. One example is a holistic approach to IT governance that has been implemented in all the universities that have undertaken reviews. The result of a holistic approach has included better meeting the needs of the user stakeholder groups by alignment with their needs through a better managed IT function.

The holistic approach contrasted with the pre-review structures that had evolved into often dysfunctional, independent structures serving limited groups within the university community. The dysfunctional groups usually occurred at the faculty or lower level. There was evidence to suggest these structures were not meeting the needs of all the stakeholder groups and were effectively sacrificing the needs of some stakeholders to meet the short term needs of other stakeholders. For example, the decentralised structures that placed many aspects of IT strategic decision making at the faculty level may have satisfied user needs at the faculty level in the short term. This sacrificed the needs of the executive and government stakeholders in terms of IT risk management and alignment at the institutional level.

The cases studied recognised that IT alignment needs to be supported IT not lead by IT. The CIO of CS1 illustrated the typical sentiment of the IT executive with the statement, "These sorts of things are all decisions that need to be made from a university perspective, not for IT to make. For us the alignment part is getting that balance right between IT informing the strategy without writing it." There was also recognition that alignment needed to occur at all levels within the organisation, as stated by the CIO of CS3, "We're trying to get the enterprise to tell us what they want us to do and then we will help them deliver against that. This is part of that collaboration of finding out what the enterprise wants at an operational and strategic level".

The recognition of the need for enterprise lead approach suggests that user stakeholders, among other stakeholders, will have some influence in the IT governance structure. In respect of this research, two issues are raised in this chapter. The first is in relation to the research thesis which in part states, "*The influence of user stakeholders should be taken into account in the ongoing operations of IT governance*". Ongoing operations also relates to the implementation stage referred to in research question 1. The second issue is in relation to research question 4: "*Do the expected outcomes of IT governance motivate user stakeholders to influence the mechanisms of IT governance design and implementation.*"

The survey results indicate that the user stakeholders believe that the outcomes, in particular alignment of IT activities with their needs, are very important in helping them achieve the objectives expected of them by the enterprise management (see section 6.2). The responses also suggest that respondents at the individual level do not believe that their IT related needs are being adequately met. In respect of the thesis topic the survey responses show that users wish to be involved in ongoing IT governance operations but do not believe this is occurring (see section 6.3).

Interview comments from the faculty management support the statements of the IT executive that user stakeholder involvement is valued and promoted at the faculty level. One typical example was the comment from the PVC in CS2, "They [IT executive] are making an effort this time [to get involvement] and are seeking our input. I think they [IT executive] are listening to what we [faculty management] are saying." Participation in ongoing operation of IT governance appears to be at the faculty level and is not occurring at the individual level, although some survey responses (see section 6.3) suggest participation at the individual level is improving.

In respect of research question 4, alignment of IT activities with business needs is highly valued by user stakeholders (see section 6.3). Survey responses show that individual users desire to influence the design and implementation of IT governance to achieve better alignment with their needs but do not believe they are able to do so. At the faculty level the motivation to achieve alignment is also strong but the faculties have come to

believe they can influence the IT governance design and implementation. The comment by the PVC in CS8 illustrates the point, “It is imperative there be engagement with colleges [faculties] and this is recognised [by IT executive]. We are all looking for that collaboration.” The belief of the faculties appears to be the result of the concerted efforts of the IT governance decision makers in securing the support of the faculties for the reviews to proceed and ultimately to be successful (see Chapter Five).

6.5 Chapter summary

The majority of case studies have recognised the importance of user involvement in the IT governance structure although the degree and the level at which this should occur is somewhat contentious. The mechanisms implemented and proposed in these areas are varied but follow the same underlying three goals: (i) participation of users in IT decision making; (ii) meaningful communication of IT central with IT users and other stakeholders; and (iii) a more mature and better managed relationship between central IT, faculties and other users.

The most common IT governance mechanisms identified by the user stakeholders that relate to these goals are: (i) user representation on IT advisory committees; (ii) the use of ongoing forums for direct user input; and (iii) as required working parties for specific issues for direct user input. Despite these mechanisms the survey of user perceptions and opinions of IT indicate that users generally have a negative perception of IT in terms of strategic support and are only slightly satisfied with operational support. They report little involvement and limited awareness of IT related strategic issues, this was the situation in all case studies including those where the IT executive maintained ongoing efforts had been made to promote user participation in IT decision making. On average the users felt there should be more consultation in IT areas and initiatives involving the core business areas of research and teaching. Other user related mechanisms, and issues, such as user relationship management and transparency of IT activities are discussed in Chapter Seven.

Survey and interview evidence suggests that user influence is more pronounced at the faculty level than at the individual user level, which is consistent with the findings from Chapter Five. Survey respondents at the individual user level reported very low levels of participation in both operational and strategic IT decision making. The survey also confirmed low levels of satisfaction with IT, although satisfaction with faculty located IT was slightly higher than satisfaction with central IT areas. Overall, the survey found that users were highly reliant on technology and were happy to try new technology products in their research and teaching functions but considered they were not consulted about and did not participate in IT decision making.

Participation of the various stakeholders, including users, in the IT governance process is recognised by the IT governance decision makers as having many beneficial outcomes. Stakeholder participation can support better communication between business management and the IT function, thereby assisting in knowledge sharing and enabling closer alignment of the IT strategies and initiatives with those of the business (Barton, 2003; Weill & Ross, 2004b). Participation on the user level can also discourage abhorrent faculty behaviour and fragmentation and in so doing promote the efficient use of IT resources and improve IT risk management (Bucher, 2001; Gillies, 2008). The IT governance decision makers were all conversant with these mechanisms and have made efforts to implement them. They appear to have been relatively successful at the faculty level but significantly less successful at the individual level. User perceptions and opinions indicate the relationship with the IT areas at the individual level are still significantly negative and may constitute a barrier to IT governance.

The findings from this chapter are related to and discussed in conjunction with, the findings from Chapter Five and Chapter Seven, in Chapter Eight. Chapter Seven, the next chapter, discusses the key mechanisms of IT governance that have been planned and implemented in the universities participating in this study.

Chapter 7 – Key mechanisms of IT governance

7.1 Introduction

This chapter discusses the key mechanisms of IT governance that the case study universities have implemented or have firm plans in place to implement. The data on which this discussion is based was gathered in phase 4 of the study. The mechanisms of IT governance are the processes and groups of activities undertaken to establish or maintain the overall IT governance structure. These key mechanisms have been drawn from the literature on IT governance. The mechanisms discussed in this section are categorised according to the related outcomes of: (i) alignment of IT activities with the strategic business goals; (ii) efficient use of IT resources; and (iii) management of IT related risks.

The research data and the findings discussed relate to research question 2, which states, "*What are the typical mechanisms of IT governance implemented within Australian universities*?" In addition, the expected outcomes of IT governance are considered in the context of the mechanisms that have been implemented. This relates to part of research question 4, which says, "*Do the expected outcomes of IT governance motivate user stakeholders to influence the mechanisms of IT governance design and implementation.*"

Section 7.2 considers the mechanisms of IT governance that were implemented in the cases studied. Then section 7.3 looks at IT governance performance monitoring as a mechanism of IT governance and as a means of support for user participation through feedback on performance levels achieved. Section 7.4 discusses the findings from this chapter with a summary for the chapter at section 7.5.

7.2 Common mechanisms of IT governance

There were a number of mechanisms in place in the case studies that related to all three of the outcomes of IT governance. These mechanisms are: (i) a holistic approach to IT governance across the organisation; (ii) transparency of IT decision making; (iii) user and central IT relationship management; (iv) appointment of a CIO or equivalent; (v) the CIO represented at a high level in the organisation; (vi) use of an IT steering committee either in an advisory or decision making capacity; and (vii) appointment of a user relationship manager or similar function.

These mechanisms are discussed in this section as mechanisms common to the three outcomes of IT governance that were identified in Chapter Two. The common mechanisms are shown in Table 7.1 by the case studies that have implemented or have firm plans in place to implement the mechanism.

No.	General IT governance mechanism	Unitechs Universities		New Universities		Gum Tree Universities		Sandstone Universities	
		CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
1	Holistic IT governance approach	**Y**	**Y**	**Y**	**Y**	**Y**		**Y**	**Y**
2	Transparency of IT decision making	**P**	**Y**	**Y**	**P**			**P**	**Y**
3	User and central IT relationship management	**Y**	**Y**	**P**	**P**	**P**		**Y**	**Y**
4	CIO appointed	**Y**	**Y**	**Y**	**COO**	**Y**		**Y**	**Y**
5	CIO at executive level				**COO**				
6	IT steering committee	**Y**	**Y**	**P**	**Y**			**Y**	**Y**
7	User relationship management function	**Y**	**Y**	**Y**		**Y**		**Y**	**Y**
8	Other user relationship support mechanisms	**Y**	**Y**	**P**	**Y**	**Y**	**Y**	**Y**	**Y**
9	Service level agreements	**Y**		**P**	**Y**		**Y**		

Y = in place
P = planned
COO = the Chief Operating Officer stands as the CIO

Table 7.1: General IT governance mechanisms by case study.

The two organisations with the least number of IT governance mechanisms planned or in place are the two Gum Tree universities, both of which have not commenced or have limited reviews of their IT governance structures. CS6 has the least number of IT governance mechanisms in place and was the only case not to have begun a review of its IT governance structure, although one was planned. CS5 has undertaken a restricted review with limited support from the university executive.

Each of the IT governance mechanisms summarised in Table 7.1 are discussed in sections 7.2.1 to 7.2.11 that follow.

7.2.1 Holistic approach to IT governance

A holistic approach to IT governance entails an organisational wide coordinated group of mechanisms to give a comprehensive structure that will improve alignment with business objectives, promote the efficient use of IT resources, and facilitate the identification and management of all IT risk across the organisation (Weill & Ross, 2004a).

Enabling a holistic approach to IT governance was quoted as an important step in improving IT governance by seven of the case studies. In all of these the prime mechanism to achieve this was through the appointment of a CIO with university wide responsibility for IT. The CIO of CS2 gave a typical example: “The CIO’s position didn’t exist in its present form until midway through 2006. It was created around the end of 2006 to be responsible for all IT including budgets and governance.”

This was supported by the comment from the CIO of CS7: “The CIO’s position was developed to be responsible for IT across the university. Typically the position was strictly non-technical, best success happens when you have a CIO who is a strategic manager rather than being a technical person.”

The CIO position at CS8 had been in existence prior to the IT review but as a result of the review the positions responsibilities have been expanded: “As a result of the review my

desk has the responsibility for information systems planning at a university level. We will be responsible for co-ordination of the college plans. It's a formal process. The idea being that we want to try and manage IT in this institution at an institutional level and have a good feel for it without constraining our activities or innovation or any of those things."

Seven of the eight case studies have implemented mechanisms to enable a holistic approach to IT governance. The principal device to achieve this was the appointment of a CIO with a specific mandate to take responsibility for IT across the organisation. In CS6, the one divergent case, the need for a holistic approach has been largely recognised but is waiting on the conduct of a review of IT governance at the University.

7.2.2 Transparency of IT decision making

Transparency of IT governance processes and IT operations is an important contributor to user engagement, helping to make sure that user expectations are realistic in terms of the IT resources that are available. This in turn assists in reducing abhorrent behaviour and ultimately fragmentation. Transparency is desirable in diverse IT areas ranging from costing to operational decision making and applies to all levels of users (Bucher, 2001; Gillies, 2008).

With the exception of CS5 and CS6 the case studies all recognised the importance of building transparency into all levels of the IT governance process and had recognised deficiencies in this area in their pre-review structures. Table 7.2 gives some examples of interview comments in respect of transparency of IT governance.

No.	Case Study	Position	Comment
1	CS1	CIO	If you added up all of what people would want us to be doing versus where did that actually fit – every year we go through the same process that there are things that get culled that you would really like to do. We need to communicate what and why this is happening to the faculties.
2	CS2	CIO	The line that I've pushed particularly with financial people is I don't want the money I just want to make it totally transparent what we're spending. So when the council says how much are we spending on IT I say we're spending thirty six million. Where does it go? It goes there, there and there.
3	CS4	COO	Then just really embedding the governance structure that we've started on into the day to day business of the university so everybody's confident that whatever prioritisation decisions are taken are transparent and people know how they're made and they feel able to contribute and have their voice heard in that process.

Table 7.2: A selection of interview comments on transparency of IT governance.

As shown by the comments in Table 7.2, the two most often mentioned reasons for the need for increased transparency iwere: (i) being able to track IT expenditure across the university; and (ii) improving communication with all levels of users to help reduce abhorrent user behaviour such as inappropriate acquisition of IT resources. An example of the need for improved transparency was given by the CIO of CS7; "Faculty IT budgets are not transparent. We don't have a good handle on what they spend. We made estimates but it's not really accurate. That is not acceptable from a governance point of view".

CS5 and CS6 have taken relatively limited steps in their respective restructures and neither had progressed in the issue beyond recognition of the problems related to the lack of transparency. In the six case studies that have taken action to improve transparency, the major mechanisms employed were improved user participation in the decision making process and a variety of other methods of improving communication and feedback to the faculties and users. This has included appointment of a user relationship manager or a similar function.

7.2.3 User and central IT relationship management

User and central IT relationship management is important to promote communication with all levels of users, improve the capacity for knowledge sharing across the organisation, and contribute to a holistic approach to IT governance (Bucher, 2001; Gillies, 2008). The reasons for the importance are diverse, ranging from avoiding abhorrent user behaviour to improving IT risk management, and achieving closer alignment with the faculties (Agee, 2005; Fernandez, 2008). As is a common trait with the mechanisms of IT governance there is considerable interrelationship between user relationship management, user participation, and transparency of IT decision making.

All of the universities involved in the study agreed that user relationship management for the Central IT area was of particular importance at both a strategic and an operational level. The CIO of CS7 gave a typical example with the comment; “You rely on people agreeing that this is the most sensible thing to do. IT Governance also depends on relationships as much. That’s probably more important. And politics, yes. And things change. You get new VCs and new DVCs coming in”.

A selection of additional interview comments in support of the recognition of the need for a focus on user relationship management is listed in Table 7.3 with additional quotes in Appendix Eleven. As the comments illustrate, the recognition of the problem is accompanied by efforts to promote the IT areas and to bring in change to IT operations to better support users.

No.	Case Study	Position	Comment
1	CS1	CIO	I think just anything we can get to just keep raising the profile. For an IT group that's one of our challenges. That's one of the things that we've got to push and promote ourselves too in terms of we probably don't sell our successes as well as we could.
2	CS3	CIO	The main driver I think is these issues of responsiveness, collaboration, communication. These sorts of things were really the drivers for saying this is not working, we've got to change.
3	CS8	CIO	Because we're having those conversations there is less suspicion that Central IT wants to control everything.

Table 7.3: A selection of interview comments on user relationship management.

The variety of reasons put forward to support the need for user relationship management was consistent with the findings of Terry and Standing (2004) and Trubitt and Overholtzer (2009). The most common of these were: (i) to help avoid undesirable IT behaviour in the faculties; (ii) to gain better acceptance of IT initiatives; (iii) improve alignment of IT activities with the faculty business objectives; and (iv) to better meet user expectations. It was also clear that complaints and other issues with IT users would be escalated through the faculties and business units to higher levels in the organisation which would reflect badly on IT management. One case study, CS1, also referred to accessing additional funding by improving user relationships both at the faculty and higher levels.

CS6 was aware of the problems caused by neglecting user relationships and the consequential continuing deterioration in the relationship between the faculties and central IT but had not taken any steps to rectify the situation. The other seven case studies had implemented or proposed to implement various mechanisms to improve and better manage user relationships. The most common mechanism employed for this purpose was the appointment of a relationship manager or similar function. Other mechanisms included more timely information dissemination and the various steps taken to improve user participation. In the cases that had begun these initiatives the CIO's reported positive contributions to the IT governance process. In particular this included gaining political

support within the organisation for current and future IT initiatives, including for the major changes arising from the recent IT governance reviews.

7.2.4 Appointment of a CIO

The appointment of a CIO or equivalent at a senior level in the organisation has important advantages in enabling the implementation of IT on a holistic basis throughout the organisation and in facilitating alignment with the business goals (Gillies & Broadbent, 2005). It also creates a senior voice or advocate of technology in the organisation which can contribute to alignment and the ability for IT strategy to be implemented throughout the institution (Chester, 2006).

All universities except CS6 have appointed a high level CIO or equivalent to take responsibility for the IT function across the university. Although Gillies and Broadbent (2005) advocated the CIO being at a high level in organisations, in the case studies this appeared to stop short of the CIO being a member of the executive business decision making body. Only in the smallest university, where the COO also performed the function of the CIO, is the CIO a member of the executive business decision making body. This inclusion was more in the wider role of a COO rather than linked to the role of CIO.

More typical was the experience of the CIO at CS5 who was unable to gain membership of the executive committee: “I did suggest the CIO should be a member [of the executive committee] … but the Vice President Resources obviously believes that IT interests and all those other interests are served by him being on the board. As the CIO role evolved I went strongly to suggest that IT needed to be on the table but they believed that IT didn’t, and this is probably the shame, add any value to what they’re doing because at their level they had a general understanding.”

In the case studies that had IT steering committees the CIO was active on the committee and in most cases chaired it and generated the agenda. As promoted by Goldstein and

Pirani (2008) the CIO's interviewed considered their main function was influencing the direction of IT rather than dictating it. This was in line with the fundamental principle espoused by one CIO, "Business led not technology driven". All CIO's interviewed were conscious of and espoused the role of IT to support the business objectives, both strategic and operational of the university.

When defining their role the emphasis was on dealing with the strategic issues and direction for IT across the entire institution. In five of the seven universities with CIO's there was an IT operational manager, reporting to the CIO, to deal with IT operational issues. In these cases the CIO took overall responsibility for the operational issues but not their day to day management. In the two remaining universities that had a CIO there were plans to create or fill an operational managers position in the near future.

In all cases the justification for the IT operational manager position was to allow the CIO to concentrate on strategic issues and to be seen as somewhat independent of operational and technical issues. The reason given for the importance of appearing independent was to strengthen strategic alliances with business and faculty management as well as support for the transparency of strategic IT initiatives and other decisions. Chester (2006) supported the importance of separating the management of IT mechanics from the advocacy and other duties of strategic management of IT on an institutional scale.

The CIO of CS5 described the reasoning behind the creation of the CIO position as being to promote a strategic approach to IT: "I lobbied for the creation of a CIO position and got that a couple of years ago. The reason was is that the move from a CTO [Chief Technical Officer] to a CIO and it's a different type of position. IT has really never been strategically viewed in this university. It's viewed as a technology function. It's seen as a service function."

Three reasons were given for the appointment of a CIO: (i) to assume responsibility for IT across the university; (ii) to give more strategic direction for IT and to better align it with the business objectives; and (iii) to increase transparency and accountability of the IT governance process.

This reasoning confirms the mechanisms expounded in the literature. Not consistent with the literature is the failure of all but one of the institutions to give the CIO a direct voice on the university executive.

7.2.5 IT steering committee

IT steering or advisory committees are important in setting the strategic direction for IT and helping alignment of the IT strategies with the business strategies through having business executive membership (Barton, 2003; Weill, 2004). Through representation on these committees user participation in IT can also be assisted (Barton, 2003).

Six of the sample universities had in place or intend to put in place IT steering committees or equivalent committees, either in an advisory capacity or in a decision making role. In five of these six cases the strategic level committee's membership was drawn from business executives, the CIO, and some representation from the functional areas. As suggested by Barton (2003), sharing membership with other strategic level business committees, assists in alignment and exchange of knowledge.

The frequency of the meetings of the IT steering committees varied but were regularly scheduled with agendas controlled by either the CIO or the executive to whom the CIO reports. The use of high level committees to advise the CIO where strategic decision making rests with the CIO has assisted in overcoming some of the criticisms of Barton (2003) who described CIO only strategic decision making as weak and likely not to be strongly aligned with the business strategies. This was supported by the CIO of CS8: "The UISC doesn't make decisions but they can endorse. The recommendation would be very persuasive but the vice chancellor makes the final decision".

A selection of additional interview comments related to the establishment of IT steering committees is shown in Table 7.4. As can be seen from the comments in Table 7.4 the opinions related to the function of the IT steering committees ranged from advisory (see

comment 1) to decision making (see comment 3). The ultimate decisions in respect of IT in all the case studies still clearly remained as the responsibility of the Vice Chancellor.

CS5 and CS6 are the two universities that do not have steering committees or plans to establish such committees. CS6 has identified this as a deficiency in their governance structure but have no specific plans at the time of the research to address the issue beyond commissioning a general IT review. CS5 does not view the formation of an IT steering committee as necessary or desirable.

No.	Case Study	Position	Comment
1	CS5	CIO	We don't have an IT steering committee. We don't have a committee of people looking after IT decisions. …. As I said, I'm not a great believer in committees. An IT steering committee would be useful from an input point of view.
2	CS6	DVC Administration	There is not a specific IT decision making committee. There's been much discussion especially from the CIO about that. We are about to embark on an IT review here and the issue of IT governance is one of our key issues. I don't believe we do that governance particularly well here and that's because the infrastructure committee doesn't look at it from a global strategic point of view in terms of IT. They're looking at it from a capital planning point of view.
3	CS8	CIO	The academic board has been disestablished. We have three sub committees that reported to the academic board; the university education committee, the university research committee and the university information strategy committee [UISC]. The chairs of those three committees now report directly into the vice chancellor. I am the chair of the UISC.

Table 7.4: A selection of interview comments on IT steering committees.

Consistent with the findings of Barton (2003) and Huang et al. (2010), the reasons given for the implementation of the steering committees were to promote alignment, give IT a strategic direction, and to give the functional areas a voice in IT strategies.

7.2.6 User relationship manager or similar function

Effective communication with all levels of users is an important component of successful IT governance (Agee, 2005). Further engagement of users in the association of business and IT strategies offers advantages to the IT governance process (Fernandez, 2008). The avoidance of abhorrent user behaviour was also seen as an important aspect of IT governance (Bucher, 2001; Gillies, 2008). These areas are all part of the relationship of the central IT area with the faculties and interrelate with the IT governance mechanism of transparency.

Seven of the universities have developed formal mechanisms to improve user relationship management activities as part of their IT governance restructures or as part of their attempts to gain faculty and wider support for acceptance of review recommendations. CS6 had recognised the need but at the time of the research had not developed any formal mechanism. Each of the universities, with the exception of CS4 and CS6 has created a position in the central IT area to liaise with faculties and users at all levels. A typical example was given by the CIO of CS2; “I’ve created a director client services and that directorate is responsible for beginning to develop a client service mechanism of feedback across all areas.”.

A selection of additional interview comments related to the creation of a user relationship management function is shown in Table 7.5. As can be seen by the comments in Table 7.5, the relationship management function is seen to be improving relationships with the faculties and providing support for IT related activities. CS4 and CS6 have developed their user relationship function using mechanisms other than the appointment of a relationship management function; these are discussed in the section 7.2.7.

The relationship management function was also seen as an important mechanism to improve IT governance transparency.

No.	Case Study	Position	Comment
1	CS1	Vice President Resources	They feel that they [the faculties] have been burnt in the past. I think I take a more balanced view of it that it was never the centralised IT group's role to provide faculty services. Basically they provided services to the central part of the university and they had a very neat thing which was they'll provide all the services up to the plug coming out of the wall and after that it's the faculty's responsibility. But that's changed over time and that's part of the reason why we recruited a director of customer relationships because we really want to have a specialist in terms of trying to build that client customer orientated client engagement.
2	CS3	CIO	Instead of having committees we've decided we'll have this relationship management function. … He'll be the manager of the project management office as well as the customer relationship manager. In the customer relationship manager or client relationship manager role his task will be to be out there finding out what everybody wants, feeding it back through the ITSC management team which he/she will be part of and also a point of escalation of issues.
3	CS8	CIO	I created this office which is just a single individual at the moment which is information services project planning support office. This will manage our [Central IT] relationship with the colleges and business units through project support. The idea being that they're providing support. They don't do the planning. They don't do project management. They provide support. They deal with the college project issues.

Table 7.5: A selection of interview comments on user relationship management.

In summary the common reasons given by the case studies for adopting a user relationship management function were:

- Facilitate the coordination of IT activities in the two planned decentralised universities.
- Gather faculty support for IT governance reforms arising from the IT governance reviews.
- Improve faculty support for ongoing IT initiatives.
- Reduce and discourage abhorrent faculty and user behaviour.
- Improve IT support and alignment with the needs of the faculties and individual users.

- Recognition and wider application of IT related best practices identified in the faculty IT operations.

These reasons recognise the influence of the faculties and other users in the IT governance process and relate to improved communication, alignment, and user participation, all mechanisms of good governance as outlined in the literature.

7.2.7 Other user relationship management mechanisms

Other mechanisms employed to improve the relationship between the central IT area and the faculties in conjunction with the user management positions are: (i) improved collection of user feedback on operational and strategic issues; (ii) processes to action user feedback; (iii) regular meetings with faculty management; (iv) formal forums to collect user input; (v) service catalogues; and (vi) liaison staff in the faculties.

Several of the case studies have developed or are developing service catalogues to improve communication and control user expectations by setting out what is provided and to communicate the obligations and expectations of the users involved. CS1, CS2, and CS3, three of the more centralized case studies have also retained staff in the faculties under central control. Part of their role is to liaise with the colleges and to support better relationships with the faculties. This attitude was demonstrated in the comment by the CFO of CS3; “People are critical in universities. We want to try and provide all the opportunities so that no one feels left out. At the end of the day we have representatives on these [user] forums”.

A selection of additional interview comments related to other mechanisms for user relationship management is listed in Table 7.6. As can be seen from the comments the mechanisms support other IT functions. For example, comment three in Table 7.6 indicates an alignment purpose as well as supporting user relationship management.

No.	Case Study	Position	Comment
1	CS1	CIO	They are still ITS [central] staff but they're based in the college and their sole purpose in life is the needs of the college.
3	CS5	CIO	I do have a service catalogue. It says this is what we produce and this is to the level of what we expect. Now that's a document that I create each year and I send it out to faculties.
3	CS6	Executive Director IT	The CSG [Computer Services Group] is the most valuable of all those meetings. That's been very useful to get that working because that's brought the people from out there to talk to us and to see what they're doing. We can find out what they're doing and they can find out what we're doing. That's a very valuable meeting. Very strong.

Table 7.6: A selection of interview comments on other mechanisms for user relationship management.

Committees are also used in some case studies to enable communication with the faculties through indirect user representation. CS6 used a regular meeting with the faculty IT managers as the principal means of improving faculty relationships. However, several users interviewed considered this was not effective and only related to the opinions and goals of the faculty IT and not the business users. One example was given by the Head of a School at CS6: "I'm quite sure IT central feels that we are being consulted but they're consulting with the support group rather than the real users. You know, they'll say well we are consulting with the faculties and we do know what's going on, but they don't know."

In addition to the specific mechanisms to improve user relationships the case studies also rely on the use of established metrics to report on user satisfaction and to respond to user concerns. These measures tend to concentrate on service levels and were in place during the various periods that it is acknowledged by IT management that user perceptions deteriorated. Each of the case study IT areas stated that these metrics were not mature or comprehensive in many respects but in each case were being further developed. The use of metrics and other performance measures is discussed in section 7.3.3.

7.2.8 Service level agreements

Service level agreements were used in CS1, CS4, and CS6 with one other university planning to adopt them as part of their implementation of IT governance. The institutions using service level agreements have quoted one of their key advantages as communicating clearly to constituents the relationship between service levels and associated costs. In this manner they encourage realistic user expectations of the services that can be provided on a user pays basis. This also adds to the transparency of the IT governance structure which, according to Gillies (2008) reduces undesirable IT acquisitions by faculties and other business units.

The CIO of CS3 explained the plans to introduce a service level agreement; “It’s on my radar to reintroduce service level agreements and that will come out of the project office. The first step we have to do there is have a service catalogue so that we know actually what services we’re going to provide. Then we’ll set some commitments against those, there will be commitments on both sides”.

Table 7.7 shows a selection of additional interview comments related to service level agreements. As the comments indicate the service level agreements are in limited use or are being refined to be more effective in supporting user needs.

Charge-backs were being used by two universities at the time of the conduct of this research, one of these institutions indicated they will be abolished in favour of service level agreements as the implementation of their restructure progresses. In addition, two universities previously used charge backs but had recently abandoned their use, one in favour of service level agreements and the other in favour of direct financing from the university.

CS3 has abandoned the use of charge-backs in favour of service level agreements. The CIO described them as setting out the commitments of both client and the IT area and thereby improving communication and aiding transparency. CS1 is planning to extend the use of service level agreements with the level of detail still to be determined. CS6 has

implemented one service level agreement with a faculty and is hoping to extend their use in future. The Executive Director of IT at CS6 clarified that the arrangement in place needs some adjustment but the mechanisms involved are sound.

No.	Case Study	Position	Comment
1	CS1	CIO	We have a service catalogue but we're now looking across the whole resources group to have service level agreements. How far they go down in an IT sense is yet to be determined.
2	CS3	CIO	We charge on a unit basis for the PCs in the labs that we maintain. But I'm trying desperately to get rid of that. It's not there for cost efficiency it's there because of the inflexibilities of our funding model.The chargeback is just a way of sorting that out. But where charge out leads ultimately is to spending all your time working out how much you're going to charge you never get it right and then you finish up charging that you've got high infrastructure costs. Then the faculties or the schools or the service centres say I can go down the road and get somebody to do it for half the price. Why can't I use them? And the soft arguments about standards and they're not paying for the infrastructure, we're paying for it etc, etc. They say hang on it's my money I can do what I want with it.
3	CS6	Executive Director IT	We don't use service level agreements properly yet. We are still developing in that respect. We do measure our responses and measure the service we give to our customer but we need to clarify our service levels and expectations.

Table 7.7: A selection of interview comments related to service level agreements.

The two case studies that have or plan to abandon charge-backs did so predominantly due to the misleading impression the level of charge-back could cause. Essentially the inclusion of infrastructure and other indirect costs in the calculation of the charge-back created the impression that the university ITS area was not competitive with faculty IT areas or outside providers. This encouraged undesirable behaviour and fragmentation by faculties in sourcing IT services and resources outside the central IT area due to perceived lower costs. This behaviour is consistent with that described as 'abhorrent' by Bucher (2001).

7.2.9 Mechanisms to achieve alignment

Alignment of IT strategies with the business goals of the organisation is one of the key outcomes from an effective IT governance structure (Weill & Ross, 2004b; Barton, 2003; Gillies, 2008). Business collaboration in the IT decision making process is seen as an important alignment mechanism (Gillies, 2008). To achieve alignment this collaboration should be with all stakeholders and IT strategies should support and complement all core business programs (Barton, 2003; Gillies, 2008).

Alignment of IT strategies with the university business strategic direction and the faculty strategies to achieve the business goals was a priority of the IT and business executives of all the sample universities. The importance of alignment was commented on by the DVC Academic in CS2; "We negotiated to make sure people understood why we were doing things to align with their needs. If you lose that alignment you basically end up with more chaos or you are irrelevant and people do things elsewhere. … It's an essential part of the restructure".

A selection of additional interview comments supporting this proposition is shown in Table 7.8 with some additional comments at Appendix Thirteen. As the comments in Table 7.8 further illustrate, the change in strategy is to be business driven rather than technology driven (see for example quote two in Table 7.8). The case studies that have recently completed IT reviews and had begun implementation of the recommendations considered that alignment had been significantly improved. In these institutions alignment had been highlighted as an issue of concern prior to the reviews and was a significant driver of the reviews themselves.

No.	Case Study	Position	Comment
1	CS1	CIO	Those sorts of things are all decisions that need to be made from a university perspective, not for IT to make. Alignment of the IT and the business strategy is one of the drivers of the review. For us the alignment part is getting that balance right between IT informing the strategy without writing it.
2	CS3	CFO	I had been concerned for quite some time that we were not getting our strategy right for IT. We were too operational and too technology driven. Also too, which is particularly important, to have much better mechanisms in place to identify the needs and aspirations of our various communities that IT serves.
3	CS7	CIO	Alignment is becoming more successful. There was a disconnect between ITS and the faculties. That came out quite strongly in the KPMG report. It's because the focus of ITS has always been on the portfolios providing university wide services rather than faculties.

Table 7.8: A selection of interview comments related to the importance of alignment.

While the strategic plan created by the executive for the whole university set the long term strategic direction for each institution, it was the faculty alignment with this direction that tended to drive the practical IT enabling plans. Whether decentralised or centralised the universities described ideal alignment of strategic business and IT objectives as involving alignment with faculty strategic planning as well as the university executive strategic planning. The theme of aligning with the faculty strategic directions as well as the University strategic direction was constant through the universities, although in CS6 there were no practical mechanisms in place or planned to achieve this.

No.	IT governance alignment mechanism	Unitechs Universities		New Universities		Gum Tree Universities		Sandstone Universities	
		CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
1	CIO on executive business committee.				**Y****				
2	CIO on other Business management committee							**Y**	**P**
3	Business executive on IT committee.	**Y**	**P**	**Y**	**Y**			**Y**	**Y**
4	Faculty representation on IT committee.							**P**	**P**
5	Strategic IT plan based on strategic business plan.	**Y**	**Y***	**Y**	**Y**	**Y***		**Y**	**Y***
6	Strategic IT plan refers to faculty business plan.	**Y**	**Y**	**P**	**Y**	**P**		**Y**	**P**
7	Periodic reviews of IT strategic plan within strategic planning cycle.			**Y**				**Y**	
8	Strategic business & IT planning cycles correspond.	**P**	**Y**	**Y**	**P**			**Y**	**Y**

P = Specific plan to put in place.
Y = In place & appears to be functional.
* = Issues with general detail of business plan.
** = COO is the equivalent to CIO and COO is on executive business committee.

Table 7.9: Summary of IT governance alignment mechanisms by Case Study

Table 7.9 above outlines the IT alignment mechanisms described by the sample universities and indicates by case study if that mechanism is currently in place in the IT governance structure or whether there is a specific plan to put the mechanism in place. These determinations are based on the comments of the IT management and executive as to the formal alignment process and whether a particular mechanism is operating effectively. A selection of interview comments related to methods of alignment, other than planning, is shown in Table 7.10. The comments in Table 7.10 illustrate the range of mechanisms that have been implemented to help in achieving alignment. Comment 1, for example, shows the utilisation of cross membership of the strategic planning groups.

No.	Case Study	Position	Comment
1	CS1	Vice President Resources	Each of the portfolio heads plus the dean of IT plus those business analysts or those business IT heads in each of those portfolios would be coming to the VC Strategic IT Planning Group.
2	CS3	CFO	What we've done is create portfolios of programs and it's up to the business or the enterprise to find projects to fit that. So for example we've got a program of work in green IT which is part of our sustainability portfolio. This is part of my enterprise led, not technology driven. It doesn't mean to say that we in IT can't initiate a project which we will do but we're not absolutely responsible for the portfolios. The business is responsible for the portfolios.
3	CS4	COO	We get alignment between our IT strategies and our general business strategy through this group [IT Advisory Group] and its membership.

Table 7.10: A selection of interview comments related to methods of alignment other than planning.

The key mechanisms commonly used by the case studies to contribute towards alignment were:

- Cross membership of the peak IT committee.
- Cross membership of other business and IT committees through high level representation.
- The matching of business and IT planning cycles.
- Planning and representation through a number of specialised groups such as those related to research and innovation.
- The coordination role of Central IT areas.

CS6 was the only university that had no formal IT to business alignment processes and in the strategic planning processes IT related impacts and issues were an afterthought. The CS5 alignment processes are limited to those initiated by the CIO and at the moment are done on an ad-hoc basis with plans to formalise the process in the future. As the comments in Table 7.11 demonstrate, there are several issues related to alignment that have driven the moves to improve in this area.

No.	Case Study	Position	Comment
1	CS5	CIO	But what I often suffer from is that the strategic plan doesn't provide me any direction at all on how to develop a strategy going forward because it's so general. And it's one of the issues because there's no linkage [of business plan to IT plan]. So this year what I did was I drafted up a strategic plan based on linkages back to the last strategic business plans. The problem is that it's aligned to a strategic plan that's being replanned right at this point. The university really has got to a point where it actually understands that the strategic plan needs to be a lot more detailed than it actually has in the past.
2	CS6	DVC Administration	It's so embarrassing. There is an IT plan but it's awful. It's terrible. What can you say? There's no alignment. I would expect that with the outcomes of the review of IT what we' will also develop then is a much more useful IT plan for the university. There will be much greater motivation for us to have one.
3	CS8	CIO	You'll see that that document [strategic business plan] is very aspirational intentionally so and it's difficult to derive tactical from something like that and say this is what we'll do. For example when we looked at it from our area of responsibility in division of information the only hook for us or the only thing we could hook to in that document was a line that read something like to enable staff and students at the university to do their best work. That's all we could find.

Table 7.11: A selection of interview comments related to issues in alignment.

The six other sample universities recognised short comings in their alignment process as part of their respective reviews into IT activities. The commonly cited problems centred on two basic issues. The first was that the university strategic plans are very general and often lack sufficient detail to translate into practical IT initiatives (see comments 1 and 3 in Table 7.11). They are often as a consequence used to establish broad, long term IT directions and to support in general terms the validity of IT initiatives. The second connected issue is being able to interpret into practical IT initiatives the strategic needs of constituents from faculties and other business units.

To overcome the alignment planning issues the IT management teams involved derived enabling IT plans from the strategic business plans of the faculties. In the absence of suitable strategic faculty plans direct contact through forums and workshops was used as an alternative. This necessitated a top-down approach from the university strategic business plan and a bottom-up planning approach from the individual faculty strategic

plans which were derived from the university strategic plan. This process is shown in Figure 7.1 with a selection of related interview comments shown in Table 7.12 which provides examples of how the various universities have encourage alignment through the planning process. The overall strategic direction was imported from the university plan and the specific detail leading to practical initiatives drawn largely from the faculty strategic business plans.

No.	Case Study	Position	Comment
1	CS2	CIO	We would use any of that [University Strategic business plan] then feed it into the IT enabling plan. The faculties will also feed into that. So again they're aligned. That's why one's strategic and one's enabling.
2	CS3	CIO	What I'm encouraging the service centres and faculties to do and particularly those that we have greater affinity with is for their operational plans to highlight outcomes that involve IT. Then this relationship management function will pick up from their plans what it is that we need to do. I guess this enterprise led is what we're saying is you put your operational plans in, give us a copy and we'll glean from that what we need to do in 2009 or 2010 to help you and then we'll push that into our planning. The university's got four strategic priorities and everybody should be aware of those. All of our operational planning is required to produce operational plans against those four strategic objectives.
3	CS4	CIO	The University's strategic plan is then devolved into a faculty plan and then a capability plan. Which is sort of the university and IT saying what are the things we should be doing to support both the overall corporate goals and also the academic activities? That capability plan is that medium three to five year view of what should be happening.

Table 7.12: A selection of interview comments related to planning.

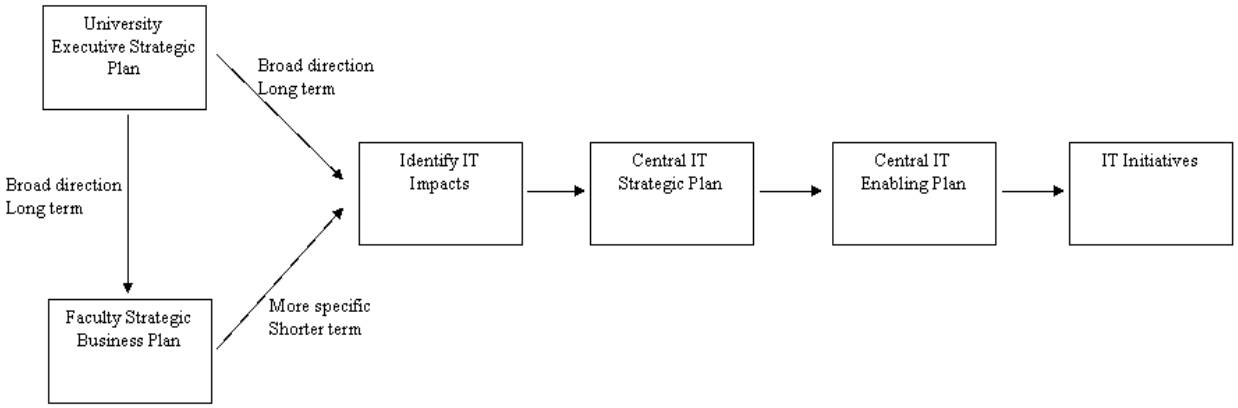


Figure 7.1: Diagram of strategic IT planning in the sample universities.

The coordinated, bottom up and top down approach to planning was a common aspiration of most of the case studies but was seen as an ongoing challenge. As shown in Figure 7.1, it necessitates an IT planning process that identifies the IT impacts from the faculty strategic business plans while conforming to the long term strategic direction of the University. This also emphasised that the IT planning would be led by the business needs of the various levels of the institution and not by the IT area.

Consistent with the literature, the linkage between user engagement, relationship management, and aligning IT with lower level needs were all seen as interrelated. An important outcome of the alignment process was given as an improved transparency of IT expenditure relative to strategic objectives. The degree of centralisation and other organisational characteristics did not appear to have a high level impact on alignment mechanisms or the strategic planning processes used. All except CS6 have attempted with various degrees of success to align their IT plans with the University's strategic objectives. CS6 considered its IT planning lacked alignment and had many deficiencies but was relying on the eminent IT review to help rectify the situation.

7.2.10 Mechanisms for efficient use of IT resources

Controlling the organisations IT resources is seen as an integral part of IT governance (Hunton et al., 2004). This includes the cost and investment optimisation that can be gained through holistic and standardised approaches arising from an effective IT governance structure (ISACA IT Governance Institute & The Office of Government Commerce, 2005). IT resources include people, applications, information, and IT infrastructure (ISACA IT Governance Institute, 2005). Weill and Ross (2004b) held that a centralized IT governance pattern would match organisations with a strategic focus on asset utilisation and cost concern. An organisation with a focus on responsiveness and innovation with less emphasis on asset utilisation would have a decentralised IT governance pattern.

Consistent with the literature CS1, CS2, CS3, CS4, and CS5 have implemented or have commenced to implement highly centralised structures and were unanimous in reporting improved levels of efficient use of IT resources. CS7 and CS8 the two sandstone universities that remain largely decentralised but are adopting a higher level of central IT coordination also stated that efficient use of IT resources was increasing, though they expressed less concern with efficient use of IT resources than all other case studies. The principal reasons given in all cases of improving efficiency were detection and reduction in duplication of IT resources, rationalisation of IT staffing university wide, and attainment of economies of scale in purchasing of IT resources. General interview comments related to the efficient use of IT resources are displayed in Table 7.13. The comments in Table 7.13 provide examples of how the utilisation of resources was of concern and how some of the cases studied have introduced mechanisms to gain more efficient use of their IT resources.

No.	Case Study	Position	Comment
1	CS3	CIO	If you look at the support group – currently we have one group looks after break and fix and one group looks after desktop deployment. They will be combined into a pool of customer support officers or computer support officers who will do whatever has to be done according to the demand at the time. Deployment will be done on a project basis rather than a service basis. We were trying to do three things. One is certainly trying to get a project culture going and we've done that. We're trying to more efficiently use what we have, particularly in terms of staff. We're also trying to get more strategy into what we do rather than responding tactically to everything.
2	CS5	CIO	It is now a very centralized structure. When I came here it was quite decentralised. I saw the opportunity to consolidate it. Now call it what it is. What I say to people is that I don't like any duplication of IT. So if we look at all the IT services that a university needs to provide or needs to have provided for it then clearly there's no duplication in that. So we don't have multiple areas dealing with desktop support with the provisioning of hardware, provision of servers, provisioning of software. There's actually very few IT staff in faculty or schools. They [Faculties] won't just go off and buy hardware and software these days because we've talked to them about providing capacity to them because we've got a lot of virtualised superstructure now.
3	CS8	CIO	The discussions I mentioned earlier I've been having with some of the faculties are about not stealing their people or their equipment away from them but trying to get them to have a look with us as the optimum way to deliver whatever services are being delivered into that area. Some of that could entail some individuals moving from the colleges into the middle because it makes more sense to do that.

Table 7.13: A selection of interview comments related to efficient use of IT resources.

Prior to commencing their restructures the seven institutions that have conducted comprehensive IT reviews all quoted concerns with the efficient use of IT resources as being one of the most important drivers of the reviews. The reviews offered potential cost savings by improving efficiency through restructure. CS6 which has not conducted a review is still experiencing significant issues with the efficient use of IT resources. The common issues in the efficient use of IT resources were:

- Duplication of services and other resources by the faculties.
- Inability to determine or track IT expenditure, particularly in the faculties.
- Loss of economies of scale in the purchase of IT assets across the university.

- System and infrastructure compatibility issues due to lack of standardisation in acquisition of IT assets.

The approach at CS1 to CS5 inclusive, has been to use centralisation as a means to better control IT resources and to reduce potential undesirable behaviour by the faculties that impacted on the efficient use of IT resources. CS8 and CS7 have avoided a high level of centralisation but have improved coordination of the faculties and established more meaningful communication to rationalise and gain more efficiency in the use of IT resources.

No.	Case Study	Position	Comment
1	CS2	DVC Academic	There was no accountability [in the faculties], we could not identify the IT spend. We had thirteen email systems and seven learning management systems. … Part of the problem is that the faculties were in the position to develop their own IT and systems. It was a management issue and a resource issue. This was not the best way to use our resources.
2	CS3	CIO	Eighty per cent of it [IT in the faculties] is just straight duplication. There's twenty per cent where they do things differently but functionally the same.
3	CS6	Executive Director IT	We have a policy for example there shall be only one email system on campus. Not that everybody accepts that but that applies to everybody except computer science, who won't stop doing what they're doing. There is nothing firm centrally. We have a preferred supplier for PCs for example, which was arrived at through very, very close consultation with the CSG members but many of the faculties simply ignore it. There are some duplication of services and IT resources in the faculties. There are certainly some. I would like to see more co-operation and more standardisation across the campus. … I think there is more that can be done in terms of sharing what we do. It's ridiculous. They should be working together.

Table 7.14: A selection of interview comments related to issues with efficient use of IT resources.

Although centralisation improved efficient use of IT resources, CS4 felt further action to improve efficiency was warranted. The decision for further action was the result of efficiency and reliability issues in systems that had not been implemented appropriately

due to financial issues at the university. This was one of the motivations of the decision to outsource key IT systems.

CS6 has many issues related to inefficient use of IT resources (see for example comment three in Table 7.14) that have been identified but remain unresolved pending the planned review. In this university the faculties were described as a 'black-hole' in terms of IT expenditure and the acquisition and use of IT resources, with little central coordination or control or even knowledge of IT resources in the faculties.

Specific mechanisms to promote the efficient use of IT resources were varied, such as in an example given by CS8. The University conducts an asset and resource survey each two years that requires all faculties and business units to provide a comprehensive list of assets and services used, including IT resources. This is a university wide activity coordinated by the Vice Chancellor's Office. This is used to identify rationalisation and efficiency opportunities but its main purpose is to track expenditure. Although mitigating some concerns with the efficient use of IT resources it also highlighted inefficiencies that at least partially motivated the universities review into IT activities. Other universities have similar activities to account for and track IT assets and expenditure. One example was given by the CFO of CS3; "We've got to do it in an integrated way so that the second phase of our major review process is the development of this new service delivery model. That will involve some significant transfers of staff from faculties and other service areas into [Central] IT".

Mechanisms commonly implemented within the case studies to promote the efficient use of IT resources included:

- Centralised policies on the acquisition of IT assets.
- Business cases to justify IT based projects.
- University wide inventory of IT assets created and regularly updated.
- Guidance by central IT areas on project justification.
- Central IT consultancy on IT resource acquisition by the faculties.
- Outsourcing of IT services.

Several of these mechanisms also related to risk management which is discussed in the next Section.

7.2.11 Mechanisms for IT risk management

One of the key business drivers for the status of IT governance is the level of risk inherent with many of the activities associated with IT activities (Hunton et al., 2004; ISACA IT Governance Institute & The Office of Government Commerce, 2005). Hunton et al. (2004) believed that risk management of IT and related areas was one of the two core components of IT governance. IT risks can occur on an operational and strategic level and include the risk of failure, underperformance, and overspending as well as the risk to assets such as information and infrastructure (Musson & Jordan, 2005). The management of IT risk is part of the corporate governance requirement to manage all aspects of risk across the entire organisation (Allens Arthur Robinson, 2005).

In all the universities the CIO or equivalent was responsible for risk management for all systems and resources that were under the control of central IT areas. Additionally all universities had a unit responsible for risk management across the university which provided oversight and standards on risk management to the IT and other areas. The CIO of CS3 described the typical situation for IT risk management; “There is a risk management reference group and that risk management reference group reports to the vice chancellor’s committee on all risk associated with the university. This includes IT risk. I am now responsible for all IT risks across the university in conjunction with the risk management reference group”.

A selection of additional interview comments concerning IT risk management in the case studies is contained in Table 7.15. The comments in Table 7.15 provide typical examples of improvements to the IT risk management through the implementation of IT governance.

No.	Case Study	Position	Comment
1	CS2	DVC Academic	Its [IT governance framework] absolutely a risk minimisation governance framework. It's reduced disaster risk down to an absolute minimum.
2	CS5	CIO	It's my responsibility to deal with IT risks. We create a risk register. We manage that and review it each year. That's reported up to our audit committee. Our audit committee consists of internal and external people. Those audit plans are revised annually and reviewed annually and they're put on a… if the risk is up in the severe area then it goes on the university risk register as well. It's a pretty well controlled process.
3	CS7	Vice President Resources	IT risk is handled by the CIO in his dual role. They have a whole range of risk plans, business continuity plans. There's a risk analysis done about virtually every major IT investment we do. The three criteria we used for moving to a shared services model were cost, quality of service and no greater risk and improved risk management. So some of those business cases some of them had a very heavy risk management component in why they were chosen and why we had to do them.

Table 7.15: A selection of interview comments related to IT risk management.

Despite this the universities, with the exception of the sandstones, reported serious concerns with the comprehensiveness and the process of risk management in the faculty IT areas prior to review and restructure. The Unitechs that are nearing completion of their respective restructures assessed the IT risk management process as now being comprehensive with regular reviews being conducted.

CS5 reported similar outcomes to the Unitechs with its CIO driven move to centralisation during its relatively limited IT review and restructure. Prior to restructure CS3 reported its IT risk management as being out of date in some areas related to central IT as well as having many concerns with IT risk management in the faculties. For example see quote 2 in Table 7.16. These IT risk management concerns both central and faculty based are expected to be resolved as the restructure is implemented. Table 7.16 contains a selection of interview comments concerning IT risk management issues. These comments are examples of concerns that were raised by the IT decision makers in each case study and that became key motivators to implement IT governance.

No.	Case Study	Position	Comment
1	CS3	CIO	The faculties got some fairly serious auditor general reports about backup and recovery and server replacements and end of life equipment that they just now don't have the funds to rectify.
2	CS4	COO	I think my view, which would be shared by the head of IT, is that at the moment the university faces an unacceptably high level of risk in the IT function. … Certainly I have been concerned for quite some time about a number of aspects of IT which go from really inadequate disaster recovery arrangements through to the consequence of skimming resourcing has been that there's really insufficient depth in the function to cope with the changing environment within the university. … When you under resource IT for seven/eight/nine years you have a level of risk exposure that's entirely different.
3	CS6	Executive Director IT	The last week has been a disaster. We had two serious problems last week; one which should never have happened and the consequence are pretty dramatic. I don't think in retrospect that we had looked at the risk of that enough. We will in the future. The second one was the normal problem where you've got a very major service just collapses on you for a day.

Table 7.16: A selection of interview comments related to IT risk management issues.

CS4 had a similar experience but although aware of the IT risk management issues had not formed a specific plan to address these issues. The Chief Operating Officer of CS4 acknowledged that rectifying the IT risk management issues was important (see comment 2 in Table 7.16) but no firm plans had been formulated to put this into action.

The two sandstone universities had comprehensive risk management processes in place prior to their IT reviews and had only some minor concerns with the risk management processes in the faculty based IT areas. Although not a major concern the restructures are expected to strengthen the risk management in the faculties through increased central coordination of the faculty based IT functions.

CS6 has many concerns with the IT risk management process in the faculties and in the central IT area. These issues have been identified and highlighted by several incidents related to poor risk management but no specific plans have been developed to deal with the risk management process overall, although the University is in the process of establishing a business continuity plan. The IT executive believes the planned IT review

will make recommendations to resolve the shortcomings in the IT risk management process. The Executive Director IT of CS6 mentioned some recent incidents that reflected on inadequate risk assessment and had caused significant system outages in one instance and the irretrievable loss of data due to failure of backup procedures in another incident.

With the exception of CS6 the case studies have reported improved IT risk management as an important outcome of their respective IT governance restructures and in particular as a result of a holistic approach to IT risk identification and management. This was less pronounced in the two Sandstone universities which reported relatively robust and comprehensive IT risk management processes prior to their IT restructures.

The common mechanisms implemented in the case studies for management of IT risk are:

- Central position or function with responsibility for identifying and monitoring IT risk across the entire organisation.
- Holistic approach to IT risk management as discussed in section 7.2.1.
- Regular reviews of IT risk registers and procedures.
- Closer cooperation and coordination with the university risk management function.
- Increased transparency in IT expenditure as discussed in section 7.2.2.

7.3 Metrics and performance management

IT governance is a dynamic, ongoing process that necessitates constant maintenance and review over the life of the organisation (Gillies & Broadbent, 2005). This review process should occur at all IT management levels both strategic and at the level where the strategic IT plan is expressed in operational reality (Gillies, 2008). The complete range of IT activities should be reported on including service levels, planning, the progress and outcomes of IT projects, as well as other management performance measures (Gillies & Broadbent, 2005). Metrics and performance management measure progress toward the

outcomes of IT governance. In this research, however, they are viewed as a mechanism of IT governance, not an outcome in itself.

Metrics and performance measurement were discussed in the case studies under four headings, review of the IT governance process itself, performance measures for central IT services levels, metrics for assisting in approving and monitoring IT initiatives, and performance measures for the executive to gauge IT strategic progress.

7.3.1 Review of the IT governance process

The review of the IT governance process entails the periodic examination of the IT governance structure in place to ensure it is operating effectively and efficiently. This review process should be imbedded in the governance process and cover all aspects related to strategic IT governance (Gillies & Broadbent, 2005).

All but one of the case studies has recently undertaken wide ranging reviews into their IT activities. The one exception, CS6, was in the process of planning a review to commence in the near future. Although the review process is consistent with the literature, in each case the IT reviews were triggered by significant and embarrassing system failures or through growing concern over shortcomings in the IT governance process, including in many cases the need to better manage expenditure on IT. The literature advocates that the review process itself should be an integral part of IT governance occurring as a natural predetermined component of IT governance. This was not the situation in the case studies examined. The review process and the key drivers of those reviews are discussed in more depth in Chapter Five.

7.3.2 Monitoring of IT service levels

In itself the mechanisms and the monitoring of IT service levels is largely an operational matter that can facilitate communication with the user and contribute to improvement of the relationship between the IT area and the faculties. The existence of a comprehensive system to monitor service levels and provide user feedback to the IT service provider is an important component of the IT governance structure (Gillies & Broadbent, 2005).

CS1 and CS7 considered they had comprehensive systems in place to measure service and satisfaction levels for Central IT provided services. CS1 has recently appointed a Deputy Director of Quality Assurance Services whose duties include monitoring the quality of all aspects of central IT services. CS7 similarly had a team whose purpose was quality control including developing and monitoring IT performance measures. For example, see quote one in Table 7.17. The additional quotes in Table 7.17 provide further examples of monitoring mechanisms.

CS2, CS3, CS5, and CS8 universities had performance measures in place for Central IT service levels but felt these were relatively immature and were developing more comprehensive measures. In these case studies the metrics were reported in detail to the IT management and in summary to the business executive with the exception of CS5 where the metrics on service levels were only reported outside the IT area on an exception basis. A selection of interview comments in relation to monitoring of IT service levels are listed in Table 7.17 with further comments at Appendix Fourteen.

No.	Case Study	Position	Comment
1	CS1	Deputy Director Quality Assurance	Change management, establishment and monitoring of IT standards, other processes we'll just assist in ensuring the process is good. There's still local monitoring but we'll have like an overarching view to make sure processes are in place for metrics to be collected and they will come back to us. … For example earlier in the year we did a survey on staff and students to see for example what they think of our helpdesk. Now we're going through the hard yards of sitting down with the areas and saying this is what the students have said, how are we going to respond and then we'll publicise that out to the university.
2	CS2	CIO	For staff we just initiated a evaluate services process which we did with five hundred staff the other day. Students we had what's call the CAS [University Assessment of Student Satisfaction] survey so they're two that we use. We don't do it for researchers, as I said. So that's one we intend to address and I think we need to encourage it more broadly.
3	CS4	COO	In the first instance IT work that's outsourced is monitored by the head of IT. Finance work that's outsourced is monitored by the CFO and so on. But I manage the Wipro [outsourcing service provider] relationship so we have a quarterly meeting with them and we review the KPIs for each area we outsourced work to them. We have a contract management office that reports through to me and probably will for I think at least the next six or nine months.

Table 7.17: A selection of interview comments related to monitoring of IT service levels.

CS4 and CS6 reported few mechanisms in place to measure satisfaction and service levels but neither had any immediate plans to improve these metrics. In CS4 the reliance was on Key Performance Indicator's (KPI's) linked to chargeback and service level agreement arrangements with the faculties. Outsourcing arrangements are more formally monitored by regular reporting and review by the COO of service metrics provided by the areas dealing direct with the outsourcing company. Regular reports by the COO are provided to the university executive on the outsourcing arrangements although this appeared to be a temporary arrangement until the university was comfortably with the outsourcing service.

The CFO of CS3 described a typical example of the shortcomings in the systems in place to measure user satisfaction; "We're not too good at measuring the value or level of

satisfaction coming from our IT efforts. We tend to be more strategically based and try and make assessment of needs. We do look at benchmark data".

All the case studies in the research sample had basic measures in place to measure service levels but only four measured user satisfaction with the service provided as shown in Table 7.18. Five of the case studies reported service level metrics on a regular basis to the business executive with one additional case, CS4, reporting only on outsourcing metrics to the business executive. The two other cases only reported to the business executive on an exception basis when complaints about service levels were escalated. The most common mechanisms for monitoring and reporting service levels were service level agreements, KPI's and other benchmark based measures, as well as a range of operational measures such as response times. According to the case studies the most immature areas of performance measurement are user satisfaction and other performance measures related to meeting user expectations.

7.3.3 Monitoring and selection of IT initiatives

A wide range of reporting metrics and associated mechanisms should be incorporated into the IT governance structure including ones designed to monitor the acquisition and implementation of new systems. This should involve justification for selection of the initiatives in terms of achieving the outcomes of alignment, efficient use of IT resources, and IT risk management (Weill & Ross, 2004a).

Return on investment (ROI) was used by CS1, CS6, CS7, and CS8 when considering the approval and prioritisation of IT initiatives. Two of these only used ROI for some IT initiatives. The most common quoted issue with ROI was the problem of quantifying benefits and costs of IT initiatives, with three of the four CIO's involved believing it was not a good measure for IT projects but used it as its use was stipulated by the executive for all university proposals for capital expenditure. For example see quote 3 in Table 7.18.

No.	Case Study	Position	Comment
1	CS1	Deputy Director Quality Assurance	We haven't done a business case for every project in the past. But from 2010 we will. For every approved project do a business case and it has to have the ROI included in that. Things like Balanced Scorecard we used to use that probably six or seven years ago and it's not to say we wouldn't use it now but it's just different management and it was more driven from the top. Return on Investment is the one that is the most focused at the moment.
2	CS2	CIO	Balanced scorecard is used in terms of the university's core strategic planning process. So balanced scorecard is the framework we use for the strategic planning and then that filters down into all other areas. For example we'll look at balanced scorecard in terms of developing enabling plans and strategic plans.
3	CS8	CIO	The way we do approach it is to say if we're kicking off a project how would we define what might be considered as a return on an investment? It's not language that the treasurer is happy with, it's not a language they find perspective that sits comfortably. So the way we approach it is to say here are the stated benefits, these benefits can translate into savings in people to the value of seventy FTE or something rather than actually putting a dollar figure on it. Or that you can't quantify the savings in the context of dollars or the benefits in the context of dollars but the benefits look like this and their not intangible but at the same time they don't translate easily to dollars.

Table 7.18: A selection of interview comments related to monitoring of IT initiatives.

CS1 and CS7 both had quality assurance groups established within the central IT area to monitor and assist faculties and other business units in managing IT related projects. These had been established as part of the recommendations of the respective IT reviews in each of the institutions with a view to providing standardisation in project management and quality in terms of achieving project objectives. In CS1 business cases including ROI for all IT projects had also been adopted as part of the review into IT.

In CS6 ROI and business cases were used only for high expenditure or contentious centrally driven IT projects such as outsourcing of email. Faculty based projects were initiated and approved within the faculties unless they required funding outside of the faculties resources, in which case they required approval by the business executive. There was no standard project management criteria used in CS6.

Balanced scorecard was used by three of the sample universities for assisting in supporting business cases for IT initiatives and in reporting the status of IT initiatives to the executive. CS2 also used cost tracking to evaluate some IT initiatives but considered one of the inherent limitations of this method was the sole focus on cost. As was the situation in many of the case studies the use of this measure was stipulated by the business executive for all types of initiatives. A summary of the mechanisms of monitoring and selecting IT initiatives by the universities participating in the research are shown in Table 7.19.

No.	Mechanisms for monitoring & selecting IT initiatives	Unitechs Universities		New Universities		Gum Tree Universities		Sandstone Universities	
		CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
1	Business cases for all IT initiatives	**P**	**Y**	**P**				**Y**	**Y**
2	ROI	**Y**					**Y**	**Y**	**Y**
3	Consultancy groups	**Y**	**Y**	**P**	**O**			**Y**	**P**
4	Post implementation reviews	**Y**	**Y**	**P**		**P**		**Y**	**Y**
5	Standard project management approach	**Y**	**Y**	**P**		**P**		**Y**	**P**
6	Balanced scorecard	**Y**	**Y**	**Y**					
7	Quality assurance groups	**Y**			**O**			**Y**	**P**

P = Specific plan to put in place.
Y = In place & appears to be functional.
O = Outsourcing projects only.

Table 7.19: Summary methods and mechanisms of quality metrics for IT governance initiatives by Case Study.

The common methods used to justify, select and prioritise IT initiatives were:

- Business cases, including the purpose, cost and benefits of the proposals as well as how they aligned with the business strategies.
- ROI used in conjunction with business cases.
- Consultancy groups to assist faculties in identifying IT initiatives and in preparing business cases to support the initiatives.

The common mechanisms used to monitor the progression of IT initiatives during development, implementation, and completion were:

- Post implementation audits and review.
- Standard project management philosophy applied to all projects.
- Balanced scorecard reporting on initiatives.
- Quality assurance group to independently monitor the quality of the project management.

7.3.4 Monitoring of IT strategic progress

The monitoring of IT strategic progress acknowledges that the IT governance process is not static but needs ongoing review and adjustment to ensure it is meeting its stated strategic objectives. This monitoring needs to be done on a regular basis and reported consistently to the executive or peak IT decision making body (Gillies & Broadbent, 2005; Gillies, 2008).

CS2 and CS3 were the only universities where formal and regular written reports on the strategic progress of the IT area compared to plan were provided to the executive. These both reported using a balanced scorecard approach. CS3 has a strategic performance process linked to the strategic business plan where the linkages to the IT operational plan are expressed as objectives. Progress against the objectives was regularly reported to the executive. The linkages and objectives are reviewed and revised on an annual basis.

In CS1, CS4, CS7, and CS8 the progress of the IT area in terms of strategic objectives was discussed at regular meetings with the executive. CS5 and CS6 reported little executive interest in the strategic or other activities of the IT area with reporting to the executive occurring on an exception basis when there were significant issues such as a system failure. This is illustrated in quote five from Table 7.20. To help monitor strategic IT progress the CIO of CS5 has introduced use of a self designed maturity model for use within the IT area, the only case study to use a maturity model of any description. Table 7.20 contains a selection of interview comments related to the monitoring of IT strategic

progress. The comments in Table 7.20 illustrate a number of examples of the range of the strategic monitoring mechanisms that have been implemented as part of IT governance.

No.	Case Study	Position	Comment
1	CS2	DVC Academic	The CIO comes to planning and management [executive business committee]. He doesn't have to come to every meeting but he comes to anything where there's an IT matter. Once a year he would do a presentation on how the world is. I do that quite regularly as well.
2	CS3	CIO	Each year they [performance goals] come out of your operational plan. So what am I going to do in 2010? I'm going to do these four things and then you get measured against those four things. In 2011 it will probably be four different things.
3	CS5	CIO	We have just started using a maturity model. The initial plan was just to assess where we are and then try to work out where the gaps are and what realistically we can do from next year and then see where we are in twelve months or eighteen months. So, yes I am planning to do that.

Table 7.20: A selection of interview comments related to monitoring of IT strategic progress.

The two methods of monitoring IT strategic progress in the case studies were: (i) regular written reports to the business executive; and (ii) regular verbal reports to the business executive.

The major impediment to monitoring strategic progress of IT in a number of the case studies was the disinterest of the business executive. It appeared from interviews with some CIO's that such disinterest was related to a culture of not viewing IT as having a strategic importance.

7.4 Discussion of findings from this chapter

This chapter discusses the research data and findings related to research question 2, which states, "*What are the typical mechanisms of IT governance implemented within*

Australian universities?" In addition the expected outcomes of IT governance are considered in the context of the mechanisms that have been implemented, this relates to part of research question 4, which says, "*Do the expected outcomes of IT governance motivate user stakeholders to influence the IT governance design and implementation.*" Research question 4 is considered in full in Chapter Eight. The findings in this chapter also relate to the thesis topic, which in part states, "*These [user stakeholder] influences should be taken into consideration in the initial design and ongoing operation of the IT governance process*".

User stakeholder influence can be seen in the planning and implementation of the IT governance mechanisms on two levels: (i) it can be seen as a direct influence on the decision to put the mechanism in place; and (ii) the mechanisms themselves have been implemented to support the integration of aspects of user stakeholder participation into the IT governance structure. The research found that implementation of the IT governance mechanisms of a holistic approach and greater accountability was a strong desire of the university executive to implement better control in terms of resource and IT risk management. Addressing IT risk management and efficient use of IT resources was primarily to overcome issues that impacted on the executives corporate governance obligations. The influence exerted by the executive is illustrated by the comment of the DVC Academic in CS2: "I realised that everyone [the executive] was holding me accountable. I tested a couple of things and I said no I can't have this accountability with the system the way it is. This is how we can do it. If you want me to be accountable here is what we have to do. We then did that. Now all the money and all the IT people report through the CIO to me."

Adoption of a review process mechanism appears to be aimed at satisfying the need expressed by many stakeholder groups for a more service orientated IT function. The Deputy Director of Quality Assurance and Services at CS7: "Our [Quality Assurance and Services] part of our brief is to make sure there are processes in place to collect user feedback. We will also monitor the results. For example, earlier in the year we did a survey on staff and students to see what they think of our helpdesk. Now we are going through the hard yards of sitting down with the areas and saying this is what has been

said, how are we going to respond and then we will publicise that out to the university. It is part of us [IT] becoming more service orientated."

At the strategic level the review process was driven by the executive to assist in dealing with the serious IT governance issues at an earlier stage. The CIO of CS8 gave a common example: "We will do a post implementation review to look and see if we achieved what we intended. There will be ongoing reviews done through my office to keep things on track. Part of my brief is to make regular reports to the UISC committee on what is happening with the [IT] governance structure."

The mechanisms of transparency, user relationship management and user participation have much in common and are discussed together for two reasons. First, they all relate principally to meeting the needs of all levels of user stakeholders. Second, they are all being employed to discourage undesirable user behaviour. The research has found these mechanisms are a response to the influence of users, as discussed in Chapter Six. The CFO of CS3 described the importance of stakeholder involvement in the process: "We are trying to provide the opportunities for people to have more input into what we do, but in a controlled environment. User input is absolutely fundamental. As part of the new structure we're creating a relationship management position. You know how critical people are in universities. We want to try and provide all the opportunities so that no one feels left out."

The CIO of CS7 referred to the avoidance of undesirable user behaviour by developing a stakeholder perspective: "At the end of the day the faculties when they want something they'll expect to get it and if the shared service is standing in the way then that's when the problems will arise. They will go outside the [IT procurement] guidelines or it could be they want to get a new service, a new application written or something and we are seen as being too slow so they go out and do it. That's why the relationship management has been put in place, to try and avoid that happening."

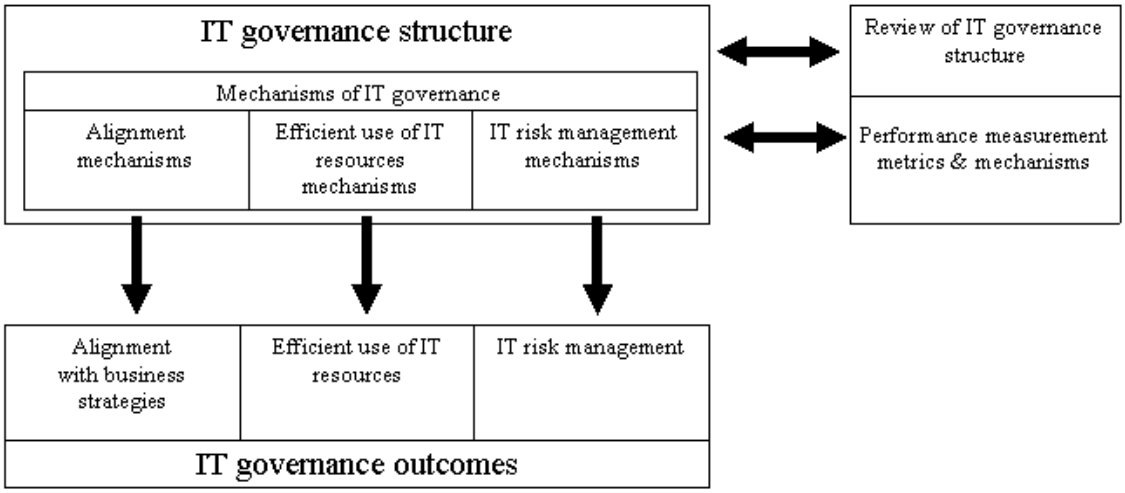


Figure 7.2: Interrelationship of mechanisms and outcomes of IT governance found in the majority of case studies.

Figure 7.2 illustrates the relationship of the mechanisms of IT governance that contribute to the outcomes, as found in the cases studied that had implemented IT governance. The literature holds that there is no one solution to IT governance (Weill & Ross, 2004b) and the findings of this research are consistent with the literature in this regard by finding that the universities had adopted similar but different mechanisms. The common ground was twofold: (i) mechanisms had been implemented to achieve IT governance; and (ii) the same outcomes of IT governance had been identified. The IT governance mechanisms found in the literature (see Chapter Two) were also found in the cases studied. The outcomes of IT governance in the literature (see for example, Gheorghe (2010), Luftman & Brier (1999), Willson & Pollard, (2009)) were consistent with those found in the case studies.

When considering the thesis topic and primary research question an important issue is whether the IT governance mechanisms planned or in place are actually capable of being influenced by the user stakeholders. The research found that many of the mechanisms are designed to encourage user involvement, particularly at the faculty level, in ongoing IT governance operations. For example: The IT strategic planning mechanism illustrated in Figure 7.1 and discussed in section 7.2.9, and faculty representation on IT committees as also discussed in section 7.2.9.

The literature has established the use of these mechanisms to encourage user involvement in the IT governance process in organisations (Gillies, 2008; Gillies & Broadbent, 2005) The findings in this research regarding encouragement of user involvement through these mechanisms are consistent with the literature. The research found two types of potential influence on the mechanisms of IT governance: (i) passive, where the IT governance decision makers took steps to address what they believed were the needs of users; and (ii) active, where the users contributed to the process of determining their needs. The potential for passive user influence was demonstrated in the initial design of the IT governance structure when the mechanisms put in place reflected what the IT decision makers perceived as necessary for beneficial user involvement. For example the membership of the IT steering committees in CS3 initially was going to include one faculty representative that would have a rotating membership from each faculty. The potential for active user influence was illustrated when after negotiation with the faculties the membership was expanded to include one permanent faculty member from computer science as well as the original proposal.

User influence through participation is well covered in the literature (Agee, 2005; Kuhn et al., 2008; Gillies, 2008; Gillies & Broadbent, 2005; Trubitt & Overholtzer, 2009) and the findings of this research in this regard are consistent with the literature. This research does however distinguish between passive and active user influence in the IT governance mechanisms in universities in Australia. Placing user influence into these two categories assists in distinguishing between the user needs as perceived by the IT governance decision makers and the user needs as perceived by the users. In terms of this research the distinction is important in understanding the nature of the influence; whether it is actually exerted by the users or if it is indirect and based on a perception held by the IT governance decision makers. It is clear that many of the IT governance mechanisms can be influenced by user groups in terms of increasing their input into the IT governance process through more representation in the decision making process, more consultation in IT initiatives, and processes, such as IT planning, more focused on their interests.

The research found that the mechanisms which involve user groups are determined at the planning and approval stages. Once implementation begins the IT governance

mechanisms are part of a coordinated group of mechanisms that have been carefully designed and there is great resistance to changing them. As demonstrated by the comment from the COO of CS5 “Am I going to change a decision [IT governance related] after it’s been proposed, discussed, negotiated and approved, because faculty X has decided all of a sudden they don’t like something. No, it’s too late.” The extent to which users can influence the actual design and implementation of the IT governance mechanisms is discussed in more detail in Chapter Eight.

The IT culture emerging in seven of the case studies appeared to accept IT governance as a dynamic and evolving concept. In most cases this was a culture strongly championed by the respective CIO’s and the business executive to whom they report. CS6, the one exception, appeared to be following the same path of review and restructure to address identified weaknesses in its IT governance structure but is only in the early stages of planning a review. The typical mechanisms of IT governance found in the case studies are listed in section 7.2 and in summary in section 7.5. These mechanisms can be categorised in terms of the outcomes of effective IT governance that they support. Many contribute toward the achievement of multiple outcomes, such as a holistic approach and accountability for IT decision making. A common feature among seven of the case studies was a trend to more centralised structures.

Seven of the eight sample universities were found to have or were developing comprehensive, well planned and coordinated mechanisms of IT governance. These appeared to be designed to contribute to the outcomes of stronger alignment, more efficient use of IT resources, and IT risk management. Many of the mechanisms found were not only capable of being influenced at the faculty level but such influence was solicited by the IT governance decision makers to nurture support for the IT governance planning and implementation, as well as to more closely align with faculty IT needs.

7.5 Chapter summary

Without exception the case studies advocated the need to work toward alignment with business objectives, promote more efficient use of IT resources, and comprehensively manage the IT risks in all university operations. The mechanisms employed to achieve these outcomes were varied in both form and implementation. The mechanisms of IT governance that were found to be common in all of the universities that had revised their structures were: (i) a holistic approach to IT governance involving models ranging from centralised to federated with coordination by the central IT area; (ii) transparency of IT decision making; (iii) accountability for IT decision making; (iii) user and central IT relationship management; (iv) the promotion of user participation; (v) a review process to monitor achievement of IT KPI's and to provide an avenue for user feedback on performance; and (vi) the design and implementation of a coordinated group of mechanisms to support IT governance.

There was general appreciation of the dynamic nature of the IT governance process and the need to support this with performance measures and user feedback for IT services, the selection, control and implementation of IT initiatives, and the strategic direction of IT. Most of the case studies acknowledged the need for more development in this area. User stakeholders at the faculty level were able to influence the IT governance planning and implementation to enable more participation in the ongoing IT governance activities. Further the research found that such faculty influence was valued and promoted by the IT governance decision makers. Chapter Eight combines and discusses the practical and conceptual findings from Chapter Five, Chapter Six, and Chapter Seven in the context of stakeholder theory.

Chapter 8 –Findings

8.1 Introduction

This chapter analyses and discusses the findings from the data gathered in the study and answers the primary and secondary research questions. The analysis and results found in this chapter corresponds to the transition from phase 4 to phase 5 of the study.

The analysis and associated findings discussed in this chapter are based on the data gathered in phase 3 and 4 of the study and discussed in Chapters Five, Six and Seven as follows: Chapter Five looked at the organisational structures and issues of the universities participating in this study. Chapter Six discussed IT governance and the various stakeholder influences and issues related to the stakeholders. Chapter Seven explored the key mechanisms of IT governance that were identified in the IT governance structures of the cases studied. This chapter contains the collective analysis of the data described in the above chapters and discusses the findings of the research in relation to the research questions and research topic. Stakeholder theory is applied to provide a deeper understanding of the influence of the user stakeholder groups that helped shape the planning and implementation of the IT governance structures in the universities participating in this study. Chapter Nine will apply the findings in this chapter in order to validate the research model.

The next section considers the IT governance decision makers identified in the cases studied. The IT governance decision makers decide the mechanisms of IT governance and how they will be influenced by the user stakeholders.

8.2 Identification of the IT governance decision makers

This section identifies who is responsible for the design of the IT governance structure and for making related decisions, including decisions about implementation. Identification of the IT decision makers is important to the thesis focus as it is these decision makers that the user stakeholders influence, both in terms of the initial design and implementation of the IT governance structure. The IT decision makers in each of the cases studied is described and discussed in more detail in section 5.4 of Chapter Five.

In six of the cases studied, the design and selection of IT governance mechanisms were undertaken by the CIO and the business executive to whom the CIO reports. In one case study, CS5, the design and selection of IT governance mechanisms was by the CIO only. In the final case, CS6, it was the executive responsible for IT who was advocating for a comprehensive review of IT to implement IT governance but no decisions about design or implementation had been made.

In all the universities participating in the study the ultimate approval of the IT governance structure was with the VC. Although having final approval the VC did not in any of the relevant cases actively participate in the design of the IT governance structures. The VC did, in all cases where IT governance had been implemented, help determine the power and urgency of some stakeholder groups. For example, in most of the cases studied the VC indicated that the IT restructure would only proceed if the majority of faculties supported the initiative. Impact of the VC conditional support was twofold: (i) it gave a great deal of importance to securing the support of the faculties, thereby increasing their relative urgency and power; and (ii) it highlighted the direct and indirect influence of the VC over the IT governance decision making.

Comments such as, “The VC is very supportive, but it is clear we must also get the support of the faculties. The last attempt [at IT governance] failed because the VC would not overrule the faculties that weren’t supporting it.”, made by the DVC Academic in CS2, expressed a sentiment that was common to all the case studies and further illustrates

the direct and indirect influence of the VC over the IT governance decision making. Such an influence raises the issue of whether the VC is a stakeholder or a decision maker in terms of the IT governance planning process. Effectively the VC can be shown to be both. On the one hand the VC is a decision maker with strong direct and indirect influence over the IT governance decisions made. On the other hand the VC can be viewed as a stakeholder. A stakeholder can be defined as a person instrumental in the organisation meeting its key objectives (Friedman & Miles, 2002; Mitchell et al., 1997).

The increase in the urgency and power of the faculties which arises from the need to gain their support for the restructure to proceed appears to have been largely transient and is discussed in more detail in section 8.5 and section 8.6. The next section considers the research findings related to the identification of key stakeholder groups by the IT governance decision makers.

8.3 Identification of stakeholder groups by the IT governance decision makers

This section discusses the research findings regarding the identification of key stakeholder groups by the IT decision makers. Identification of key stakeholders is important to gauge which user groups were considered in the IT governance decision making and planning. The primary research question and the research thesis rest on the ability to identify stakeholders to enable their influence to be analysed.

As discussed in Chapter Two, the literature suggests a wide range of potential stakeholders to be considered by organisations (Donaldson & Preston, 1995; Mitchell et al., 1997). Included in this range are primary and secondary stakeholders (Freeman, 1984). The research found that secondary stakeholders such as the community were not included in the groups of stakeholders identified in the IT governance planning stage of any of the cases. Consideration of secondary stakeholders did occur in some operational IT decisions such as website design and electronic information dissemination. The reason for their exclusion is simply the group's lack of urgency and power, as discussed in more

detail in section 8.5 and section 8.6. The finding that secondary stakeholders are excluded from consideration in the IT planning and implementation issues is consistent with the literature (see for example Okunoye et al., 2008).

The research found the purpose of identification of the stakeholders by the IT governance decision makers was twofold: (i) to enable a process to meet their needs, including to resolve issues and support ongoing business requirements; and (ii) to gain their support to allow the restructure to be approved. The VC had final approval of the restructures and particular needs to be satisfied in relation to corporate governance of the university. Corporate governance needs included meeting the government and audit requirements that related to IT governance. In the seven cases studied that had adopted IT governance, central IT areas were responsible for much of the implementation and ongoing operational management of IT governance as a result of the trend to further centralisation of IT decision making (see Chapter Five, section 5.4.3). The central IT areas were identified as stakeholders in all the cases studied that had commenced the IT governance planning and implementation process.

The key stakeholders identified by the IT governance decision makers all had a direct relationship with the IT governance function. Individuals were considered as members or representatives of larger groups. In the cases studied where IT governance planning and implementation had commenced, individual users were involved in the process through several mechanisms, such as focus groups and forums, but they were not the level at which in-depth consultation and negotiation occurred. The identification of higher level groups, schools or faculties, appeared twofold: (i) to control the complexity of managing the consultation process by reducing the number of parties involved; and (ii) to involve the groups that were perceived to posses the most power.

The CIO of CS2 reflected the comments of all the seven case studies that had begun the IT governance planning and implementation, with the statement, “We want everyone [all users] involved but you can’t individually talk to 5,000 people [employees].”

The Sandstone universities identified and negotiated with user stakeholders at the school level. The other cases studied did this at the faculty level. The size of the university did

not impact on the level at which the principal user representative groups were identified. For example, both the smallest (CS4) and the second largest (CS1) of the cases studied identified the faculties as the user group, while the largest (CS7) identified at the school level. The reasons given for considering stakeholders at the school level were to achieve better alignment of IT decision making with the research needs of users. The CIO of CS7 illustrated research importance on a university level with the comment, “We wish to manage our IT on a university level while allowing our researchers to innovate and grow [the research]. We need to be talking to the sub-groups [schools] as well as the faculties.”

In the universities that identified at the faculty level there was evidence to suggest that the faculties may not be representative of their constituent schools. For example, the comment by a Head of School in CS6, “The [faculty] management dictate to us. They don’t talk; they don’t get our point of view. We don’t know what is happening until it happens.”

Some stakeholders had an indirect influence on the IT governance function but were not separately identified by the IT governance decision makers. For example, the government and audit function had a direct and crucial influence on the institutions corporate governance requirements and thereby had an indirect influence on the IT governance functions. The government and audit interests were expressed through the corporate governance needs of the VC and they were not separately consulted in the IT governance planning process by the IT governance decision makers. Only stakeholders that had a direct contribution or influence on the achievement of the IT governance outcomes were taken into consideration by the IT governance decision makers. The identification of stakeholders based on the criteria on contributing to or influencing the organisations objectives is consistent with a broader but balanced definition of stakeholder (Friedman & Miles, 2006). In terms of IT related areas prior university based studies in the literature have approached stakeholder identification in the same manner (Okunoye et al., 2008).

The identification of stakeholders by the IT governance decision makers is recognition that the user stakeholder’s involvement in IT governance planning and implementation are appropriate and desirable. When a stakeholder’s involvement is appropriate and desirable the stakeholder has legitimacy (Mitchell et al., 1997). The normative view of

stakeholder theory holds that the organisation should address the needs of its legitimate stakeholders (Donaldson & Preston, 1995).

Normative and descriptive contradiction

Stakeholder salience may create a contradiction between the normative and descriptive stakeholder approach (Sonpar et al., 2010). That is a gap between those who do receive the most attention from the IT governance decision makers and those who should receive the most attention in IT governance planning and implementation. The potential contradiction was illustrated in interviews with the IT governance decision makers. The responses always identified the alignment of IT with the needs of the research and teaching functions as a key outcome of the process; that is they were afforded a high degree of legitimacy in the stakeholder identification stage (see Chapter Seven). However, when discussing the input of stakeholders, interview comments indicated that power was the most important determinant of involvement followed by urgency (see section 8.6).

The contradiction arises if the stakeholders identified in the preliminary stages are not the stakeholders who possess the power and urgency as perceived by the IT governance decision makers. The normative, who should be involved, identification of stakeholders and the descriptive, who is actually involved, consultation process can become inconsistent. A similar gap between the normative and descriptive views of stakeholder theory was found in a political context (de Bussy & Kelly, 2010). This research is unique in identifying such a gap or contradiction in an IT governance planning and implementation process in a university setting.

The stakeholder salience approach in the IT governance planning and implementation process raises a potential for contradiction to occur at two levels: (i) the faculties although possessing the power and even the urgency, were not the level that would achieve the best alignment as identified in the normative approach; and (ii) the faculties that did not possess the power and urgency of other faculties may not receive as much attention as was identified as appropriate in the normative approach.

In order to address the potential contradiction it is proposed that a superior approach may be the use of reactive and proactive stakeholder management practices rather than the predominant use of stakeholder saliency in IT governance planning and implementation situations. The reactive and proactive stakeholder management practices have been previously applied in a public relations context (Smudde & Courtright, 2011) but not to an IT governance planning and implementation situation.

The IT governance planning process would be initiated by a reactive approach to analyse the relationships of stakeholders, regardless of saliency, with the IT function or IT governance function if it is in place. Such a reactive analysis would identify issues and other aspects of IT relationships from a stakeholder's perspective. From the relationships identified prescriptions for improvement could be formulated. The proactive approach to analyse the stakeholder's relationships with IT governance would look forward to ways and mechanisms to produce opportunities to develop the relationship in the future. Neither approach would be based on the stakeholder's saliency. Reactive and proactive analysis would analyse and establish each stakeholder's relationship without regard to their saliency. These could be extended on a stakeholder by stakeholder basis as the need arose by developing the relationship that was already in place.

The reactive and proactive relationship approach would align the normative and descriptive aspects of stakeholder theory. In addition the proposed approach would be a comprehensive coverage of stakeholder needs, past and future, through a stakeholder relationship perspective. By building on relationships the mechanisms of IT governance could be designed on the same basis, with the potential to produce a better balance of user involvement. The contradiction between the normative and descriptive approaches to stakeholder theory would then be addressed by removing saliency issues.

Once identified the influence of the stakeholder groups was then based on the perception of their respective power. The analysis of the power of the respective stakeholder groups is discussed in more detail in section 8.6. The next section discusses the legitimacy of the stakeholders identified. Legitimacy, urgency, and power are the three criteria put forward in the literature as the primary contributors for relationships between the stakeholders and management (Mitchell et al., 1997).

8.4 Legitimacy of stakeholder groups

Legitimacy of stakeholder groups refers to their valid and accepted relationship with the organisation (Mitchell et al., 1997). Legitimacy is important to determine because only stakeholders with a valid and accepted relationship should be included in IT governance planning and implementation. In all cases stakeholders were only considered by the IT governance decision makers if they had a legitimate relationship with the institution. Although all key stakeholders identified were legitimate, not all legitimate stakeholders were considered, for example the secondary stakeholders.

The findings of this research related to the recognition of legitimacy are consistent with the literature for IT decision making in universities (Okunoye et al., 2008). The precondition of legitimacy of stakeholders applied to all cases. This included CS6 which had not completed preparation for its proposed review but had begun a process of identifying stakeholders.

Legitimacy paradox

The IT governance decision makers in the case studies recognised the legitimacy of both the university executive and the user stakeholder groups (see section 8.3). That is the involvement of both groups were seen by the IT governance decision makers as appropriate, desirable, and necessary to achieve the best outcomes from the IT governance planning and implementation process. In the strategic decisions about centralisation of the IT governance decision making, although considered to have legitimacy, the user stakeholders were excluded. The rationalising of resources and the reduction of costs through greater centralisation also had legitimacy as it was mandated by the university executive, presumably as part of its corporate governance obligations.

The legitimacy paradox arises in that the aim of cost cutting may not lead to the best outcomes for the user stakeholders who have legitimacy. The main concern for user stakeholders (see the survey results in Chapter Six) was alignment of the IT activities

with their corporate objectives, including research and teaching activities. The legitimacy paradox has been identified by the literature in relation to the health care industry in the USA (Sonpar et al., 2010). This research is unique in identifying the legitimacy paradox in an IT governance planning and implementation situation in a university environment.

The reaction of the IT governance decision makers to the legitimacy paradox was to give priority to the legitimate claims of the business executive over the legitimate claims of the user stakeholders. Effectively this meant the user stakeholder claims were only considered within the confines of the cost cutting and rationalisation activities. The evidence suggests the IT governance decision makers changed their focus, once the strategic framework for centralisation had been determined, from the university executive to the user stakeholders. A behaviour that is consistent with the literature (Sonpar et al., 2010). With the change in focus to the legitimate claims of the user stakeholders concerted efforts were then made to meet their needs through the mechanisms of IT governance being planned (see section 8.8). No concessions were considered that would impact to any significant extent the cost cutting strategies, as discussed in section 8.9. In terms of stakeholder salience the business executive clearly has the ultimate level of power and an approach based on salience will not resolve the legitimacy paradox. The comments of the IT governance decision makers in fact suggest that the power of the business executive overrode any influence of the legitimacy of the user stakeholders. An example was given by the CIO of CS2, “My brief when I accepted the CIO position was to centralise and get some structured governance in place. There was no option to leave things as they were or to just patch them up. Things had to change.”

The next section looks at the perceived urgency of the identified stakeholders and how it impacts on the stakeholders influence over IT governance decision making. Urgency is the second of the three criteria of stakeholder saliency that helps determine the level of attention given to a stakeholder.

8.5 Urgency of user stakeholder groups

Stakeholder urgency refers to the level of compulsion or demand for attention that the stakeholder can exert (Mitchell et al., 1997). Urgency is important because it helps to explain the influence user stakeholders groups can exert on the IT governance decision makers and the mechanisms that are planned and implemented. The research found that the urgency of stakeholders in the IT governance review, planning and implementation process also varied. The IT governance decision makers determined the level of urgency of stakeholders based on two criteria; (i) the level of demand the stakeholder group made for the needs to be addressed; and (ii) the level of importance the IT decision makers placed on the stakeholder's need. The outcomes in resolving the stakeholder's needs are illustrated in Figure 8.1.

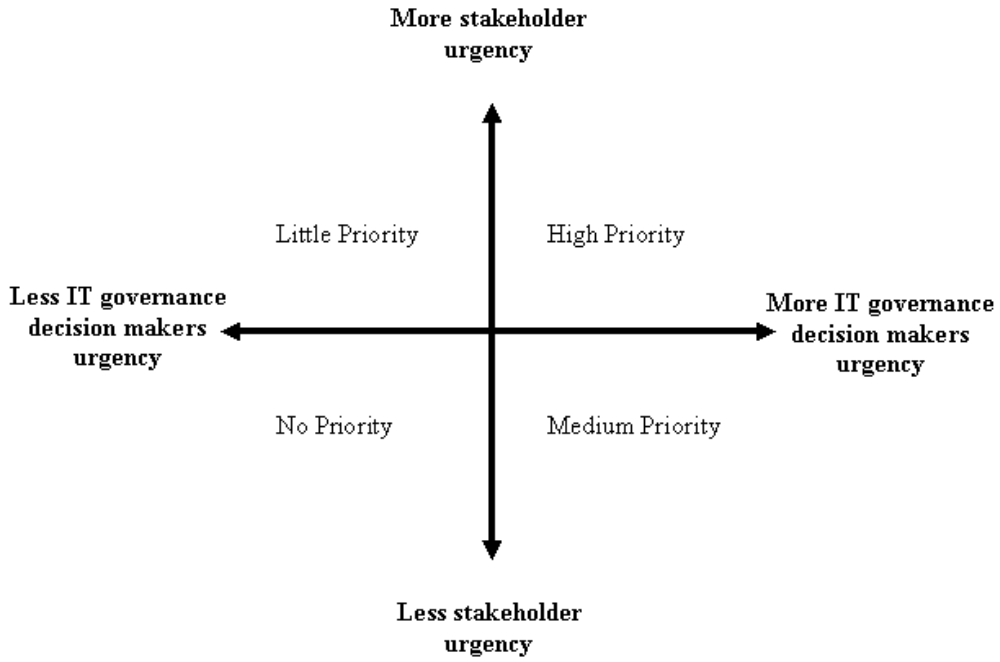


Figure 8.1: Outcomes from stakeholder urgency versus IT governance decision maker's perception of importance.

The literature identified two factors as contributing to urgency: (i) time sensitivity of the stakeholder demand; and (ii) the criticality of the demand to the organisation (Mitchell et al., 1997). The finding of this research that urgency was driven by the urgency of the IT governance decision makers corresponds to the criticality of the issue to the organisation. The urgency of the demand of the stakeholder relates to the time sensitivity of the period in which the demand needs to be resolved. The findings related to urgency are consistent with the general theory but this research is unique in identifying their presence in a university IT governance situation.

Trigger events, such as the system failure in CS2 (see Chapter Five), generated a high degree of urgency in both the user stakeholder group and in the IT governance decision makers responsible for planning the IT governance and for maintaining the existing system. As shown in Figure 8.1 high urgency for both parties gave the issue a high priority, with an immediate response.

Where IT governance decision makers gave an issue more urgency and the user stakeholders did not, then the issue tended to be categorised as a medium priority. Medium priority, for the purposes of this research means the need was addressed as soon as resources allowed but after needs of a high priority. An example of this from the cases studied was duplication of resources across the university. The faculty user groups treated duplication of resources as a low priority as they believed it had no immediate or direct impact on them. The IT governance decision makers, responsible for IT across the university, gave duplication of resources a high priority. The response to the issue is seen as medium priority as it was addressed in the restructures only after needs that both the stakeholders and decision makers considered urgent had been addressed.

If a need remained unaddressed over a period of time, then urgency tended to increase until it reached a critical point and the need was addressed. In some situations where the IT decision makers did not place a high level of importance on the need, a complacency effect set in and the need was never addressed, despite an increasing level of stakeholder urgency. For example, the comment by the Director of Teaching and Learning at CS6, “We needed to upgrade desperately when the system [learning support system] kept crashing, but we kept being told there were other priorities. In the end we stopped using

it." As shown in Figure 8.1, low IT governance decision maker urgency coupled with high stakeholder urgency resulted in little priority to resolve the need.

In situations where several stakeholder groups shared a common need there was a cumulative effect of the degree of urgency each could communicate, thus needs that involved several groups of stakeholders could increase the urgency of the need. The comment by the CIO of CS3 illustrated the cumulative effect, "At first it was just one faculty but then others picked up on the idea so we started the process to evaluate and eventually purchased the [learning management] system."

The IT governance decision makers analysed stakeholder needs, taking into account their respective urgency, when designing the IT governance structures. The process involving the analysis of user needs is discussed in more detail in relation to IT governance issues in Chapter Five. Each of the institutions involved in the study did a major assessment of IT governance related issues, including identification of the stakeholders and how they were impacted by the issue. The assessment involved a proactive determination of some of the more urgent stakeholders needs, and was typically done as part of the justification of the need to restructure and later used in the design of the new structure.

The research found that stakeholder urgency was an important driver of 'when' a need was addressed but power was the principal driver of 'how' the need was addressed. Although stakeholder power was a consideration in 'when' an issue was addressed it often took a secondary position to urgency of the stakeholder involved. For example, the Human Resource Manager of CS4 commented, "I rang them to say it [Administrative system] keeps crashing on me and I have to get some data to the VC by 4pm. They responded very quickly. They promised the changes [IT governance] are going to make sure the systems work together better so it will stop being a problem."

More strategic examples were the need for alignment of IT strategies with the business objectives at the faculty level. The urgency of the user stakeholders to have the alignment need addressed, coupled with the support of its urgency by the IT decision makers, meant alignment at this level was a priority in the restructures. Although alignment at the faculty level was addressed for all faculties, some faculties were able to negotiate and achieve

further concessions, such as direct representation on committees. The ability to negotiate affected 'how' the need was met and is related to power as discussed in section 8.6. Specific alignment mechanisms are further discussed in Chapter Six.

Stakeholder theory has long recognised the importance of urgency in determining the stakeholder and management relationship (Mitchell et al., 1997). The findings of this research has added to the literature by considering and describing how the effect of user stakeholder urgency in IT governance planning and implementation can be tempered by the degree of importance the IT governance decision makers place on the user stakeholder need.

The next section discusses the research findings in respect of the effect of stakeholder power on the IT governance planning process. Power is the third and final criteria of the salience approach to stakeholder and management relationships (Mitchell et al., 1997).

8.6 Respective power of user stakeholder groups

Power in terms of stakeholder groups refers to the influence or control that they can exert over those making the decisions (Mitchell et al., 1997). Of the three criteria power is considered the most critical in determining the priority of stakeholders (ibid). In this study the relative power of the stakeholders was established through consolidating and analysing the interview responses of the IT governance decision makers, as discussed in Chapter Six.

There is evidence to suggest that some faculties attempted to inflate the perception of their power. The inflation of power was done in order to gain an advantage in the resolution of any competing demands from other stakeholder groups that arose in the IT governance planning process. For example, the CIO of CS1 commented, "We certainly value the views they [a faculty] put forward but they are not the sole owners of the issue. As the others [faculties] are quick to remind us."

Although stakeholder power was not explicitly determined by the IT governance decision makers it was clear through their comments that power was an important determinant of how much weight they would place on the stakeholder's views and even how often their view would be sought. As illustrated by the comment of the CIO of CS7, "He has the VC's ear, I certainly do need to listen to him and seek his input. There is a great deal of politics at play and we need to be aware of that at all times".

The research found there were three principal determinants of power: (i) Attitude to the proposed IT governance structure; (ii) How important the group's support was to allow the restructure to proceed; and (iii) The status of the group in the eyes of the business executive.

Although the concept of power is well established in the literature (Mitchell et al., 1997), this research extends the concept of power by identifying its determinants in an IT governance setting in Australian universities. If the attitude of the stakeholder group to the proposed restructure was negative it experienced an increase in its negotiation power as the IT governance decision makers were willing to compromise more in order to secure the groups support. The increase in power experienced by these groups was temporary as it reduced once the desired support was obtained. If the support was not obtained there was a limit whereby the IT governance decision makers determined that gaining the negative groups support became a 'lost cause'. An example was given by the DVC Academic in CS2, "There was one faculty PVC that could not be persuaded, despite all our efforts to make it acceptable to them. In the end we had the majority of faculties supporting the changes [to IT governance]. The one that would not accept [the changes] was told by the VC to toe the line or leave, they were given that ultimatum."

Although not always as serious, each of the cases studied reported similar occurrences at different levels. When the 'lost cause' point was reached the power of the negative stakeholder group rapidly diminished as the IT decision makers focused their efforts on gaining the support of other stakeholder groups. The power lost by the 'lost cause' group then transferred to the groups where the opportunity of obtaining support was still seen as viable by the IT governance decision makers. The transfer of power effect is the second determinant of power related to the importance of support. The respective importance of

attitude and the importance of support are both factors created by the VC's declaration that occurred in each of the cases studied requiring the support of the majority of faculties for the restructures to be approved. Examples supporting the conclusions regarding user stakeholder attitude and the importance of user stakeholder support are discussed in Chapter Five and Chapter Six.

In all the institutions participating in the study it was clear through comments by those interviewed at all levels that some stakeholders and stakeholder groups enjoyed a higher status than others. One example was given by the CIO in CS3, "He sits on the capital allocation committee, it is crucial to have him on side".

Status appeared to be due to a number of factors, such as: senior position, serving on key committees, research outcomes and grants achieved, and highly regarded for knowledge or experience. The higher status indicated that these stakeholders views and opinions were highly regarded by the business executive and consequently by the IT governance decision makers. Status was a direct and substantial contributor to stakeholder power, as discussed in Chapter Five and Chapter Six.

As shown in Figure 8.2, power was found to be transient in respect of the user stakeholder groups. The vertical axis represents the user stakeholder power and the horizontal axis shows the stages from approval to ongoing operation. The plot represents the downward trend in the user stakeholder's power as the restructure advances. The power the faculties and business units appeared to exert was maximised when support for the IT governance restructures was proposed and lessened after acceptance and approval of the changes. Unlike attitude and the importance of stakeholder support, status did not diminish over time. As discussed in section 8.5 the trend was similar to that found in the case of urgency.

Figure 8.2 captures the findings of this research in relation to the transiency of stakeholder power in IT governance planning and implementation activities in the cases studied. The decline in stakeholder power due to the change in the stage of IT governance restructure is illustrated by a comment from the CIO of CS3, "We had approval so we moved our efforts to implementing. At that point negotiations [with faculties] finished

and the structure no longer debatable, only changes to overcome unforeseen problems were done. These were mostly technical."

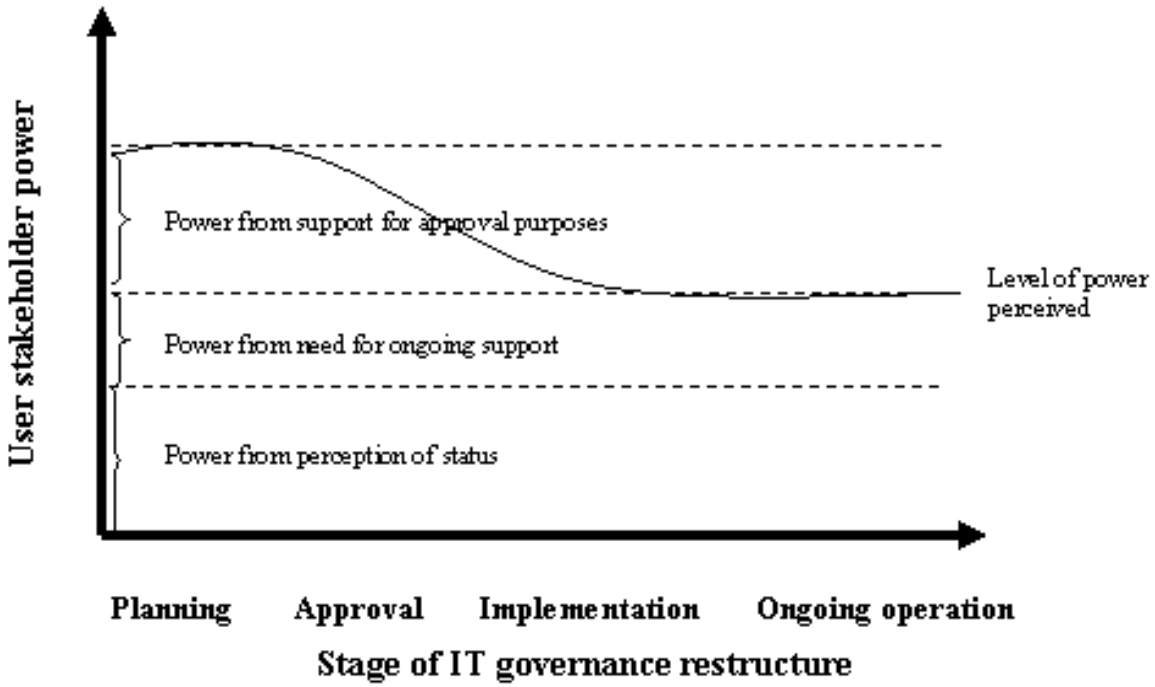


Figure 8.2: Transiency of faculty power over time as indicated by data collected.

The stakeholders themselves acknowledge the importance of power. For example, one of the most common concerns expressed by the faculties about the IT governance restructures was their loss of power over the IT decision making. The IT governance decision makers were aware of the faculty sentiment and adopted planning strategies to address that concern. The strategies designed to address the faculty concerns over the loss of power are discussed in Chapter Six. Examples of the power related strategies included: representation on the IT steering committee, planning processes to help align faculty business objectives with the IT initiatives, and service level agreements.

The literature recognises the dynamic nature of stakeholder attributes, including power, and that over time they are likely to change (Driscoll & Crombie, 2001). The findings of this research in respect of the transiency of faculty power is consistent with the literature

but the mapping of it in IT governance in a university setting is a new contribution to the literature.

The next section discusses the research findings on the effect of the differing perspective of stakeholders of the outcomes of IT governance. Consideration of the different perspectives is important to gauge whether the mechanisms of IT governance are meeting the needs of the different stakeholders.

8.7 Variations in views of outcomes

The research found that although the importance of the achievement of the core outcomes of IT governance were acknowledged by all stakeholder groups, there was some conflict as to what constituted achievement. For example, business alignment was capable of being defined at three levels: (i) at the university strategic level; (ii) at the faculty or business unit level; and (iii) at the operational level with the core functions such as teaching and research.

The priority or comparative importance each stakeholder group placed on the outcomes also varied. For example, the faculties were often more concerned with business alignment at their level than with risk management. The business executive however viewed risk management as a priority that needed immediate resolution, and business alignment, although important did not require the same priority.

The problem in the definitions of outcomes of IT governance was common to all cases studied. The IT decision makers recognised the problem and responded to it with a three fold process: (i) identifying the outcomes and affected stakeholders; (ii) creating multi definitions of the outcomes (which essentially meant adopting a multi-level approach to issues and outcomes); and (iii) consulting with the affected stakeholders to produce multi-level solutions.

Where the conflict caused by variations in views of outcomes by different stakeholder groups persisted it was resolved through negotiation with the stakeholders involved. However, consistent with the literature (see for example Boesso and Kumar (2009)), the negotiation ability of any particular stakeholder group was related primarily to the power of the group and secondly to the urgency of the group. This is further discussed in section 8.8.

The next section considers the influence of stakeholders on the design of the IT governance structure from the three perspectives espoused by stakeholder theory.

8.8 Stakeholder theory and the participation of user stakeholder groups in IT governance design

This section will discuss the application of stakeholder theory to the consideration of the participation of user stakeholder groups in the IT governance design process. Stakeholder theory will then be applied to explain how these user groups participate in the planning and implementation stages of IT governance. The purpose of this section is to establish the appropriateness of applying stakeholder theory to explain the process through which user stakeholders can exert influence. The literature relating to stakeholder theory is discussed in more detail in Chapter Two.

Figure 8.3: Diagram of the decision making process from a stakeholder perspective.

Figure 8.3 shows the process used by the IT governance decision makers in considering stakeholder input in the IT governance planning. Figure 8.3 is drawn from the data gathered from the seven cases studied that have begun their IT governance restructure.

The IT governance planning process shown in Figure 8.3 was drawn from the description of the planning process given during the interviews of the IT governance decision makers in each of the universities that had implemented IT governance. As discussed in section 8.2 the process described in Figure 8.3 is driven and managed by the IT governance decision makers in each case studied. The first step in the decision making process is identification of the stakeholder groups that will be involved in the process. Only stakeholders who were perceived by the IT governance decision makers as having an 'economic' or equivalent relationship with IT governance were identified. Section 8.3 discusses the findings in respect of identification of the stakeholders.

The two related types of needs of the stakeholders were then determined by identifying: (i) the needs in relation to IT governance issues that were currently impacting the stakeholder group and needed to be resolved; and (ii) the needs of the group in terms of output from the IT governance structure. The outputs of IT governance were discussed in Chapter Seven under the headings better alignment of IT strategies with business objectives, improved IT risk management, and more efficient use of IT resources.

A proposed design of IT governance was then constructed and presented to the stakeholder groups for consideration and discussion. Centralisation of the IT governance decision making was determined outside the process described in Figure 8.3, it was found to be determined by the organisational characteristics of cost sensitivity and research orientation of the university. The decision making process for centralisation will be discussed in detail in section 8.9. The proposed IT governance design was then negotiated with the stakeholders, as shown in Stage Four of Figure 8.3. The negotiation strength of any particular user group depended on their power (discussed in section 8.6) and urgency (discussed in section 8.5). Deadlines and time limits were established for all phases of the decision making process and stalemates or drawn out negotiations were resolved by the IT governance decision makers. Such resolution by the IT governance decision makers occurred regardless of whether they were one of the conflicting parties. Efforts were

always made to explain the reasons for the decisions made and to overall increase transparency of the process. The increase in transparency is consistent with the literature on the mechanisms of IT governance (Bucher, 2001; Gillies, 2008).

From this decision making process the final IT governance structure was documented and efforts by the IT governance decision makers turned to promoting the structure and implementing it.

In keeping with stakeholder theory the user and other groups participating in the IT governance planning and implementation do so to obtain benefits from contributing to the process and in the form of IT governance outputs. The priority that the interests of each stakeholder group should receive was not self-evident but was determined by the IT governance decision makers. Stakeholder theory has four central pillars: (i) it is descriptive; (ii) it is instrumental; (iii) it is normative; and (iv) it is managerial (Donaldson & Preston, 1995). The descriptive view describes how the organisation actually does behave toward its stakeholders. The instrumental view holds that stakeholder needs are addressed to maintain reputation and achieve long term business goals. The normative view is that attending to stakeholder needs is an ethical responsibility, while managerial considers the structures and processes to address the needs of all stakeholders (ibid).

The application of stakeholder theory to the IT governance planning and implementation process offers advantages in each of the research areas. First, a model of the IT governance process can be established using stakeholder theory and the process is therefore descriptive. The model proposed in this research is presented and discussed in Chapter Nine. Second, stakeholder theory can be applied to offer an approach to establish and investigate the links between IT governance planning and implementation and the practice of stakeholder management. Such a framework is an instrumental approach. Establishment and investigation of the links is discussed in this chapter and Chapter Six. Third, stakeholders have been identified by their respective interests in the IT governance planning and implementation process. The IT governance decision makers have treated the interests of the identified stakeholders as being intrinsically valuable, although not all interests were perceived as equal, as discussed in section 8.6. The identification of

stakeholders and their interests corresponds to the normative view offered by stakeholder theory. Finally, the IT governance planning and implementation process can be viewed as descriptive, in that it suggests structures and practices to address the needs of all stakeholders. Further, the interests of the identified stakeholders have been given attention prior to the finalisation of the IT governance structure, as discussed in this chapter.

This research is unique in applying stakeholder theory to IT governance planning and implementation in a university setting. The next section discusses in more detail the influence of the user stakeholders on the design of the IT governance structure.

8.9 Analysis of user stakeholder influence on IT governance design

This section considers the influence of the user stakeholders on the IT governance design, both in terms of planning and implementation. The influence of the user stakeholder groups is central to the primary research question and research topic.

Although the range of user stakeholders identified in each of the cases studied were similar (see Chapter Six), the individual user groups power and purpose for inclusion in the IT governance planning process differed. Reasons given by the IT governance decision makers for the inclusion of the various stakeholders classified as users in this study were:

- To gain the approval that was required for the restructure to proceed.
- To gain support for the new structure and mechanisms that were needed for IT governance to be successful.
- To discourage undesirable user behaviour that may adversely impact on IT governance.
- To better achieve the alignment of business objectives with IT governance at all levels of the organisation.

- To better manage the IT governance related risks across the entire university.
- To identify IT resources and more efficiently manage all IT resources across the university.

The reasons given for the inclusion of user stakeholders in the IT governance planning are consistent with the literature related to the mechanisms of IT governance as discussed in Chapter Two. Reasons given in support of the need for restructure were discussed in Chapter Five and in summary were:

- Reduce costs through more efficient management of IT resources.
- Better manage IT related risks across the organisation.
- Improve alignment of IT related strategies with business strategies.

These reasons were identified by the IT governance decision makers based on a stakeholder analysis, as described in section 8.2. User stakeholder groups were included in the analysis as they were important to the planning of IT governance and to its ongoing operation.

The principal influence on the strategic orientation of the IT governance structure was cost and the research orientation of the university. As discussed in Chapter Six, the more cost concerned the institution was, the more centralised the IT governance structure. The more research orientated the institution the less centralised the IT governance structure. The findings on the principal influences of strategic orientation are consistent with the general literature (Weill & Ross, 2004b) and with the literature specific to universities (Meyer, 2006; Waggener & Rickards, 2007).

Cost concerns and the degree of research orientation of the universities were both driven by the background, history and current objectives of the university. Where the cost concern influence was not as strong the centralisation decision became more dependent on negotiation between the user stakeholders and the IT governance decision makers to resolve any conflict. In universities where there was not a strong research orientation then

cost concern became the defacto standard and the university tended to centralisation of the IT decision making with no or very little negotiation with the user stakeholders.

The principal conflict was where the IT decision making power would reside. As discussed in Chapter Five, the IT decision making had historically rested largely with the faculties. With the implementation of IT governance pressure mounted for more of the IT decision making power to transfer to the central IT area. The main negotiation point and subsequent conflict resolution was through the mechanisms of IT governance that were implemented in the revised structures. For example, the faculties could negotiate for more direct representation on the IT steering committee in exchange for supporting the restructures. The IT governance mechanisms are discussed in detail in Chapter Seven.

The research found that the power and urgency of the faculties and other user stakeholder groups determined the levels of direct representation, or other participation they could negotiate. Such negotiation also could include the design and operational aspects of the mechanism through which they could express their participation in the IT governance process.

The literature in regard to the salience of stakeholders identified power and urgency as being the strongest determinants of stakeholder power (de Bussy & Kelly, 2010; Mitchell et al., 1997), in this regard this research is consistent with the literature. The negotiation by user stakeholders of the planning and implementation of the mechanisms of IT governance are unique to this research.

The next section discusses the research findings in relation to the primary and secondary research questions.

8.10 Findings related to research questions

This section discusses the analysis and findings presented in section 8.1 to section 8.9 in terms of the research questions. The primary and secondary research questions were posed to contribute to filling the ‘gap’ identified in the literature as outlined in Chapter

Two. Additionally the research questions serve to focus the research in order to validate the research model, as discussed in Chapter Nine.

The primary research question is:

1. *What influence do user stakeholder groups have on the planning and implementation of the key mechanisms of IT governance in Australian universities?*

As discussed in section 8.3, user stakeholder groups were identified by the IT governance decision makers as key stakeholders in the planning and implementation of IT governance. The user stakeholder's participation in the IT governance planning and implementation was encouraged and actively sought by the IT governance decision makers. The research found the participation of the user groups did not extend to the determination of the degree of centralisation of the IT governance structure, although the approval of the majority of these groups was required for the restructures to proceed. The limitation in consideration of the user stakeholders with a legitimate claim can lead to a legitimacy paradox as discussed in section 8.4.

The strength of the influence the user stakeholder groups could exert depended primarily on the power they possessed as perceived by the IT governance decision makers (see section 8.6). A secondary contributor was the degree of urgency the stakeholders had (see section 8.5). Not all the constituents of a user group were perceived as having the same degree of power. The perception of power also varied over time, as discussed in section 8.6. As a result the degree of influence of any particular user stakeholder was able to exert over the IT governance planning process varied over time. As discussed in the answer to research question four, the user stakeholder's attitude and perception of the IT governance proposals was also a contributor to the degree of power of a stakeholder.

The literature holds that stakeholder power is the principal driver of consideration or influence (de Bussy & Kelly, 2010). The finding of this research that power is the main driver of influence in IT governance planning and implementation is consistent with the literature, but extends it to an IT governance situation in a university context.

The urgency of the stakeholders was also an important contributor to influence but was found to be secondary to power. Urgency is discussed in section 8.5 and, similar to power, was found to be variable over time. Although variable the research found the level of power and urgency of the user stakeholder groups was sufficient so that the design of the IT governance structures not only took into account the needs of the stakeholders but also the need to gain and hold their support for the new structures.

The needs of the stakeholders were identified by the IT governance decision makers in terms of alignment with business objectives, improved IT risk management, and more efficient use of IT resources. The first influence over the selection of IT mechanisms was to meet the various needs in these categories of outputs. These are discussed in Chapter Seven. Examples include, alignment of IT with faculty planning as well as the university strategies, focus groups and other forums for users to express their needs, monitoring of service response times, and representation on IT governance committees.

Where conflict occurred between stakeholder groups they were resolved through negotiation. Each party's negotiation strength depended on their respective power. For example the CIO in CS3 commented: "They [particular faculty] were given a permanent representative on the IT steering committee as they have the highest enrolments and more labs." Similar situations were described in the other cases studied.

The second influence over the selection of IT governance mechanisms was related to gaining support for the restructure and ongoing operation of the IT governance structures. Support was required for two reasons: (i) to help avoid undesirable user behaviour during the ongoing operation of the IT governance structure; and (ii) to get enough support to allow the restructure to be approved by the VC. The effects of the requirements for support are discussed in section 8.9. Examples of these mechanisms include those related to increasing the transparency of IT decision making and improving the level of user involvement in IT decision making. The mechanisms are discussed in more detail in Chapter Seven.

There is some overlap evident between the mechanisms implemented through the influences of support and need. For example, the IT strategic and operational plans being drawn from both the university strategic plan and the faculty strategic plans serves both alignment of IT with business strategies as well as increasing trust and support of the IT governance structure.

In conclusion the research found, the influence exerted by user stakeholder groups on the selection of IT governance mechanisms was found to be significant but variable according to the group's determinants of power such as attitude to IT governance and the need to gain their support for the restructure to proceed. Urgency was also a determinant.

The reliance on a stakeholder's salience to determine their level of influence may create a contradiction between the normative and descriptive stakeholder theory approaches (see section 8.3). The normative, who should be involved, identification of stakeholders and the descriptive, who is actually involved, consultation process can become inconsistent (de Bussy & Kelly, 2010). There were some comments made by the IT management that indicated that although all faculties were identified as stakeholders, some of these groups had a much less involvement than others. For example, the Executive Director of CS6 commented, "we are planning to consult with all faculties but there is an ongoing issue with computer science, they won't talk to us and we won't consult with them. They won't stop what they are doing." A further example was given by the CIO of CS2, "Of course we talk more to the areas we have more affinity with, we find that more productive."

The influence exerted by user stakeholders did not extend to the question of the degree of centralisation the IT governance structure should adopt. Centralisation was an issue decided by the VC in consultation with the other IT governance decision makers. The exclusion of some legitimate stakeholders from aspects of the IT governance planning and implementation created a legitimacy paradox (see section 8.4). There were comments from the IT decision makers and Faculty staff in all participating universities that indicated the legitimacy paradox did existed in the issue of centralisation. For example, the comment by the CIO of CS5, "I took the opportunity to consolidate through centralisation, the faculties were not happy with the changes but the decision had to be made." The Head of a School in CS2 commented, "These changes [IT related] affect us

greatly, you think they [Faculty management] would talk to us first, but they don't. We are just told, we have no input."

The secondary research questions are:

2. *What are the typical mechanisms of IT governance implemented within Australian universities?*

The seven universities participating in the study that have implemented IT governance have implemented a wide range of IT governance mechanisms designed to suit their individual circumstances and needs. There are several mechanisms of IT governance that the cases studied have in common. The common IT governance mechanisms are discussed in Chapter Seven, and include:

- Holistic approach to IT governance across the institution.
- Appointment of a CIO to take institution wide responsibility for IT governance.
- An IT steering committee to make IT governance related decisions or to advise and make recommendations to the CIO.
- Increased stakeholder input into IT related decisions.
- Mechanisms to assist in aligning IT strategies with business strategies.
- Mechanisms to promote the more efficient use of IT resources across the institution.
- Mechanisms to allow the better more comprehensive management of IT related risks.

Each of the seven cases also designed and implemented an IT governance structure that consisted of a planned, formal, and coordinated group of mechanisms. The literature has extensively identified and discussed the mechanisms of IT governance (De Haes & Van Grembergen, 2009; Fernandez, 2008; Gillies & Broadbent, 2005; Nfuka & Rusu, 2011; Willson & Pollard, 2009). The findings of the IT governance mechanisms present in the universities participating in this study are consistent with the literature.

3. *How do user stakeholders participate in the IT governance planning process followed in Australian universities?*

The IT governance decision makers determined who would participate in the IT governance planning process by identifying the stakeholders who contributed to or were going to be reliant on the IT governance structure to achieve their business objectives. As discussed in section 8.3, users were identified as stakeholders. In consultation with the stakeholders the IT governance decision makers then determined their needs in terms of the outputs of alignment, risk management, and the more efficient use of IT resources. Issues in the existing use of IT resources were also identified, again through consultation with the users.

After analysis of the needs and issues the IT governance structure was mapped in broad terms and stakeholders again consulted through a number of forums ranging from surveys to focus groups, and direct discussion with the representatives of the stakeholder groups. The various forums used are discussed in Chapter Six. This process identified conflicts between competing stakeholder needs which were then resolved through negotiation. Negotiation between the conflicting stakeholders was managed by and the outcomes arbitrated by the IT governance decision makers. The negotiation strength of the stakeholders was not always equal and was dependent on their power and urgency, as discussed in the response to the primary research question.

Once the structure was determined in broad terms specific mechanisms to support the structure were then proposed by the IT governance decision makers. The more detailed structure was then discussed again with the user stakeholders and the mechanisms reviewed and refined as necessary.

The finding of this research identifying the IT governance planning and implementation process from a user stakeholder perspective in a university environment is unique to this research.

In all the stages of the planning process strategies were used by the IT decision makers to ensure the process kept moving forward. For example; timetabling and planning of key decision points, deadlines for consultation and comment, and ultimately curtailing negotiations that became prolonged by imposing a decision.

4. *Do user attitudes and perceptions of IT governance influence the selection and the implementation of the mechanisms of IT governance in Australian universities?*

The research found that user attitudes and perceptions of the IT governance structure were contributing factors to the power of users as perceived by the IT governance decision makers. A negative user attitude to the IT governance restructure was viewed as a threat to the restructure proceeding. The threat was emphasised by the VC mandating the support of the majority of faculties was a precondition to approval of the restructure. As a result, overcoming negative perceptions and gaining faculty support was essential to the success of the restructure, and led to the increase in power of the faculty.

There was a point at which the IT governance decision makers determined that gaining the support of a negatively minded faculty became a 'lost cause', as discussed in section 8.6. The more power possessed by a stakeholder the higher the 'lost cause' limit and the more effort to gain that stakeholders support. Although efforts continued to gain the support of the 'lost cause' they reduced in intensity and the power of the stakeholder concerned reduced. The support of the other stakeholder faculties then increased in importance, increasing their power in the eyes of the IT governance decision makers. The efforts to gain support then transferred to the other stakeholders, in response to their increased power. A positive stakeholder attitude to IT governance was fostered but the power of the stakeholder generally remained steady.

As discussed in Chapter Six, the relationship with the Central IT area and the user stakeholders was often characterised by mistrust and even animosity. The negative relationship transferred to the proposed IT governance restructures, which involved an increase in IT decision making responsibility in the Central IT area. The IT governance

decision makers viewed the negative stakeholder attitudes as threatening the proposed restructures and responded with a number of initiatives to address the user concerns. The initiatives are discussed in detail in Chapter Seven; but included mechanisms to increase transparency of IT decision making, mechanisms to implement user relationship management, as well as clear definitions of the roles and responsibilities of the IT area.

The literature has recognised both the impact of user attitude (Okunoye et al., 2008) and the associated remedies (Agee, 2005). The finding of the potential impact of user attitude is consistent with the literature but is unique in applying it to an IT governance planning and implementation situation in a university environment.

In conclusion, the research found that there is evidence to support the contention that user attitudes and perceptions of IT governance does impact on the IT governance decision makers. The level of influence is dependant on the respective power of the stakeholders but clearly can influence the selection and implementation of the mechanisms of IT governance in the Australian universities that participated in the study.

The next section summarises the analysis and research findings presented and discussed in this Chapter.

8.11 Chapter summary

The research found that the influence of user stakeholder groups was a key factor in the planning of the IT governance structures and the selection of IT governance mechanisms to support the structure. In addition stakeholder theory assists in explaining the IT governance decision making process. However, the research also found that the influence of user stakeholders did not extend to all planning decisions nor could all aspects of IT governance planning decisions be explained by the application of stakeholder theory.

The major decision that could not be fully explained by stakeholder theory was the strategic decision regarding the degree of centralisation of the IT governance function.

The main determinants of centralisation were the cost sensitivity and the strength of the research orientation of the university. User stakeholders did not directly participate in the decision of centralisation, although it was an issue that impacted both their support for the changes and their relationship with the IT functions.

The IT governance decisions relating to the actual IT governance structure and the mechanisms used in the structure can be well expressed in terms of stakeholder theory. Decisions about the IT governance mechanisms employed and details of their operation were clearly influenced by the user stakeholder groups. The influence of the user groups was dependent on each of the groups power and to a lesser extent its urgency. Urgency tended to vary from issue to issue whereas power was more consistent across all issues relevant to a particular user group. Both urgency and power did change over time.

Stakeholder power as perceived by the IT governance decision makers was found to be principally related to three factors: (i) Attitude to the proposed IT governance restructure; (ii) How important the groups support was to allow the restructure to proceed; and (iii) The status of the group in the eyes of the business executive. Urgency was mainly determined on an issue basis and was determined by two factors: (i) By the impact of the issue as perceived by the user group; and (ii) By the impact of the issue on the user group as perceived by the IT governance decision makers.

The research found that the common stakeholder related process used by the IT governance decision makers was: (i) identify the key ‘economic’ stakeholders in the IT governance planning and restructure: (ii) Determine the stakeholders needs, including issues that effected the stakeholder and needed to be resolved; (iii) Consult with the stakeholders about the proposed mechanisms and how they would operate; (iv) Negotiate and manage conflicts between stakeholder groups; and (v) Finalise and promote structure to the stakeholders.

Table 8.1 summarises the findings discussed in this chapter and describes the contribution of the findings in terms of whether they confirm the literature or add to the literature.

No.	Finding from this research	Contribution to the literature	Section discussed
1	Normative versus descriptive stakeholder theory contradiction	Confirms the literature but new in respect of IT governance planning & implementation in universities	8.3
2	Legitimacy of stakeholder paradox	Confirms the literature but new in respect of IT governance planning & implementation in universities	8.4
3	Identification of stakeholders with a direct affect on IT governance	Confirms the literature	8.3
4	Identification of determinants of stakeholder urgency	Confirms the literature but new in respect of IT governance planning & implementation in universities	8.5
5	Identification & mapping of the transiency of stakeholder power	Confirms the literature but new in respect of IT governance planning & implementation in universities	8.6
6	The multilevel approach to some IT governance planning issues	Confirms the literature	8.7
7	Defining of the decision making process for IT governance planning & implementation process in universities from a stakeholders perspective	Adds a new contribution to the literature	8.8
8	Identification of the influences on centralisation of the IT governance decision making process in universities	Confirms the literature	8.9
9	Identification of the mechanisms of IT governance in universities that have adopted IT governance	Confirms the literature	8.10
10	The analysis of the potential impact of user attitude on IT governance planning and implementation	Confirms the literature but new in respect of IT governance planning & implementation in universities	8.10

Table 8.1: Summary of findings and the contribution to the literature.

As Table 8.1 illustrates the research has made a significant contribution, both in adding to the literature and in confirming the literature in regard to the influence of user stakeholders on the IT governance planning and implementation from a stakeholder theory perspective.

Chapter Nine will discuss the research conclusions and validate the research model.

Chapter 9 – Model Evaluation & Conclusion

9.1 Introduction

This research proposes that, *one of the key factors in an effective IT governance structure in universities is the influence of user stakeholders. These influences should be taken into consideration in the initial design and implementation of the IT governance process*s.

While IT governance has received much research attention in recent years, there is little research exploring the major influences on the design and implementation of IT governance in public universities in Australia. The purpose of this research is to contribute to the body of knowledge of IT governance by addressing this gap in the literature in two ways: (i) by developing a theoretical research model to describe the influence of user stakeholders on IT governance planning and implementation in Australian universities; and (ii) by applying stakeholder theory to develop and evaluate the research model.

This chapter gives an overview of the study, a summary of the key findings, a discussion and evaluation of the research model, followed by a discussion of the limitations, wider application of the research, and directions for future research.

9.2 Overview of the research study

The purpose of the overview is to briefly describe the planning and conduct of the research in order to help establish the reliability and integrity of the conclusions that are discussed. Chapter Two and Chapter Three discuss the literature and the application of

stakeholder theory used to develop and interpret the research model. As detailed in Chapter Four, the research was divided into five phases as follows:

Phase one involved a comprehensive review of the literature relating to effective IT governance and related issues. The purpose of the review was to identify gaps in the literature from which the research questions could be developed. The topics addressed included IT governance, university governance, IT governance in universities, and stakeholder theory. The outcomes of an IT governance structure were established as: alignment with business objectives; the efficient use of IT resources; and comprehensive management of IT risks. The review of the literature contributed to formulation of the case study and interview protocols as well as assisting in the development of the preliminary research model that was undertaken in Phase Two and Phase Three.

Phase Two of the study involved developing the case study and interview protocols. These were developed using document searches and the review of the literature undertaken in Phase One. The protocols provided consistency and structure between the case studies. An initial instrument was also developed for the user survey.

Phase Three of the study involved testing and refining the case study and interview protocols through a pilot case study. In addition the data gathered was used, in conjunction with the literature review, to develop a preliminary research model. Sixteen interviews were conducted at the pilot case study, with eight of those related to validating the user survey instrument. Those interviewed included the CIO, the executive to whom the CIO reports and users from all levels and functions.

Phase Four of the study involved gathering data from the seven universities participating in the study in addition to the pilot study. Phase Four then involved a multiple case study analysis. The purpose of this phase was to validate the research model in a practical environment. In total, eight public universities consented to participate in the research. This represented two each from the categories of universities identified by Marginson and Considine (2000): Sandstone/ Redbrick, Unitechs, Gum Tree, and New Universities. This selection ensured a good cross section of universities in Australia. As detailed in Chapter Four, the analysis of user perceptions and attitudes to IT governance related issues was

drawn from a larger sample through the use of a survey. Such a large base would not have been possible through the use of interviews alone. The larger sample permitted more meaningful and reliable analysis.

Phase five of the study involved the interpretation of the findings from the multiple case studies, including the user survey. The findings confirmed that user stakeholders had an important influence on the mechanisms and outcomes of IT governance. The outcomes of IT governance that were identified as important by the organisations were also impacted by the needs and pressures of the various user stakeholders identified.

The research found that stakeholder theory could be applied to provide a richer understanding of the influence of user stakeholder groups on the IT governance planning and implementation process, as demonstrated by the research findings and validation of the research model.

9.3 Summary of major findings

The major findings are discussed in Chapter Eight and summarised in this chapter to help establish the context for validation of the research model. The data collected and its analysis is discussed in this thesis in three areas: (i) organisational background of the cases studied, as discussed in Chapter Five; (ii) stakeholder influence and issues, as discussed in Chapter Six; and (iii) the key mechanisms of IT governance found in the cases studied, as discussed in Chapter Seven.

The results have been confirmed through the cross-sectional research of the eight case studies representing almost 22% of the population of Australian public universities. Triangulation, using multiple data sources such as interviews, document searches, and a survey, has ensured a high degree of internal validity and reliability. A structured research methodology employing a pilot study and the development of a conceptual framework has also contributed to the reliability of the research. Overall, the research model demonstrates consistency with the data collected in the study and provides a

deeper understanding of the major influences on the planning and implementation of IT governance in Australian universities. The research model is discussed and validated in section 9.4.

The research found that the universities shared a common IT related history that evolved over time and was unplanned on a university level. Issues of lack of alignment with business objectives, unmanaged IT risks, and inefficient use of IT resources were common to all the universities participating in the study. The organic history of IT in universities is established in the literature (Voloudakis, 2010). The findings related to the IT related history of the cases studied confirm the literature. The universities were aware of these issues and had all recognised the need to adopt IT governance (see the discussion in Chapter Five). The history and the recognition of the need to adopt IT governance is important to this research as it establishes that it is timely and feasible to conduct research into aspects of IT governance planning and implementation, such as undertaken in this research.

The research found that a variety of mechanisms have been implemented to enact IT governance in the seven of the eight universities participating in the research. The remaining case has recognised the need to implement IT governance but has yet to begin the review process. The seven universities that have recently undertaken reviews of their IT governance processes had based the design of their IT governance structures on a number of common mechanisms as expounded by the literature:

- CIO or equivalent appointed to take overall responsibility for IT governance (Chester, 2006; Gillies & Broadbent, 2005; Nfuka & Rusu, 2011).
- Adoption of a holistic approach embracing a university wide and united IT governance process (Weill & Ross, 2004a).
- A planned IT governance structure (Weill & Ross, 2004a).
- A coordinated group of mechanisms to achieve and maintain IT governance. (De Haes & Van Grembergen, 2009).
- Central IT responsible for coordinating or directly controlling the faculty IT process (Miller, 2002; Voloudakis, 2010).

The findings of the mechanisms of IT governance that have or are planned to be implemented confirm the literature.

The move to implement IT governance was driven by the identification of serious issues in meeting the needs of the stakeholders. The research found that acceptance by the various user stakeholders was important for the reviews and subsequent restructures to proceed. Such support was secured through promises of cost savings through better utilisation of IT resources, more comprehensive management of IT risks, and better alignment with the business objectives of the organisation. The actual mechanisms of IT governance put in place were found to be strongly influenced, although often indirectly by the user stakeholder groups identified.

All cases studied identified users as key stakeholders but in order to reduce management complexity interacted at the faculty level or school level. Individual users had input through the faculty or school and through other mechanisms, such as forums and focus groups. The research found that the more research orientated Sandstone universities consulted at the school level and the faculty level, the other cases studied consulted only at the faculty level. The research found that the selection of the level at which in-depth consultation and negotiation occurred was based on stakeholder power as perceived by the IT governance decision makers.

The identification of user stakeholders is the normative view, which is the recognition of who should be involved in the process (Donaldson & Preston, 1995). The descriptive approach of who is actually involved in the IT governance planning and implementation was based on the perception of power of the stakeholder group possessed (see section 8.3 and 8.10). That is a gap was created between those who do receive the most attention from the IT governance decision makers and those who should receive the most attention. The research found that the IT governance decision makers while indicating the need to consult with all levels of user stakeholders and all faculties did not consult equally with all the stakeholder groups they had identified. The contradiction occurred on two levels: (i) faculties were consulted but lower groups, such as schools and individuals, were either

not consulted or consulted to a much lesser extent; and (ii) not all faculties were given the same voice or level of consultation.

The potential contradiction between the normative and descriptive approaches of stakeholder theory is recognised in the literature (de Bussy & Kelly, 2010). The findings of this research in respect of the contradiction between the normative and descriptive approaches confirms the literature but is unique in applying it to an IT governance planning and implementation process in universities.

The research found the strength of influence the user stakeholders could exert depended on the degree of urgency and power they were perceived to possess in the eyes of the IT governance decision makers. Urgency was related to two factors (see section 8.5): (i) the level of demand the user stakeholder group made for the needs to be addressed; and (ii) the level of importance the IT decision makers placed on the stakeholders needs. The findings in respect of urgency confirm the literature but are unique to IT governance planning and implementation in universities.

Power of the user stakeholders was found to be dependent on three factors (see section 8.6): (i) attitude to the proposed IT governance structure; (ii) how important the groups support was to allow the restructure to proceed; and (iii) the status of the group in the eyes of the business executive.

The IT executive in all the case studies stated the importance of executive support for IT strategic initiatives and ongoing resource allocation was paramount to success. There was consistent evidence of a high level of trust in the IT executive by the university executive but obtaining approval for initiatives, such as IT governance reviews, still involved considerable effort and was certainly not taken for granted by the IT executive. In order to secure VC approval to proceed with the IT governance reviews and restructures the IT executive recognised the need to gain user support at the faculty level. From the perception of the IT executive this gave the user stakeholder groups more power, this is discussed in Chapter Eight. The degree of power that a user stakeholder group could exert was found to be transient. The findings in regard to user stakeholder power were

consistent with the literature but new to an IT governance planning and implementation situation in universities.

As discussed in Chapter Five, prior to the reviews a common comment from members of the IT executive was that IT strategy was, 'technology led not business driven' and that IT needed to better serve the business objectives. The change in attitude resulted in recognition by the IT executive that users had gained power and that IT needed to be better aligned with their needs. This finding suggests that more importance has been placed on user participation to maintain reputation and achieve the business objectives as maintained in the instrumental approach to stakeholder theory by Friedman and Miles (2004).

The survey analysis confirmed the findings from the interviews of user stakeholders that a negative attitude toward the central IT area was not uncommon. Interviews of the CIO's in the cases studied, indicated an awareness of the negative attitude and a concern that it could threaten the IT governance approval and implementation. The research indicated that user attitudes and perceptions were of considerable importance to the IT executive, and the IT governance structures reflected efforts to improve in this area. In this sense the importance of improving user attitudes and perceptions led to an increase in the power of the users. The findings of the importance of user attitude to the IT governance planning and implementation confirm the literature but are new to a university context.

The research found that although user stakeholders could influence the IT governance mechanisms they had no influence over the degree of centralisation the university had decided to adopt. Centralisation of IT decision making was found to be dictated by the university executive based on two factors: (i) cost concern of the university which resulted in greater centralisation; and (ii) the research orientation of the university, the stronger the research orientation the less centralised the university became. The literature established that cost and closer alignment with faculty researchers and other user needs, were the principal drivers of centralisation versus decentralisation of the IT decision making (Meyer, 2006; Waggener, 2010; Waggener & Rickards, 2007). The findings of this research were consistent with the literature in this regard.

The IT governance decision makers recognised the desirability and appropriateness of the involvement of user stakeholders and the business executive. That is they acknowledged the legitimacy of both stakeholder groups. However, in the strategic decisions about centralisation of the IT governance decision making, although considered to have legitimacy, the user stakeholders were excluded. The exclusion of legitimate stakeholders in preference to the recognition of another stakeholder group based on the perception or use of power can create a legitimacy paradox (see Chapter Eight). The legitimacy paradox is discussed in the literature (Sonpar et al., 2010), but this research is new in identifying the potential legitimacy paradox in an IT governance planning and implementation situation in universities.

The findings of this research articulate the influences of user stakeholders on the IT governance structures and the associated outcomes by validating the research model, as will be discussed in section 9.4. The research findings address the gap in the literature relating to such influences. The analysis and findings from Chapter Eight extend the understanding of these influences by considering them in light of stakeholder theory. The application of stakeholder theory in the research addresses the gap in the literature relating to understanding the influences on the planning and implementation of IT governance in the context of stakeholder theory. The next section discusses and validates the research model.

9.4 Discussion and validation of the research model

The research model was developed from the literature on IT governance (see Chapter Two and Chapter Three) and confirmed through the application of the research findings that were summarised in section 9.3. Validation of the model is important to confirm its accuracy and usefulness.

The research questions were designed to support the confirmation and validation of the research model, as shown in Figure 9.1. The findings of the research were applied to answer the research questions in Chapter Eight. The findings are therefore focused on the

components and relationships described in the research model. The validated model will provide guidance to IT governance decision makers in understanding the importance and flow of user stakeholder influence in IT governance planning and implementation. The application of stakeholder theory to develop and validate the research model contributes to consideration of a stakeholder's perspective when designing IT governance structures.

The model represents the IT governance planning and implementation process from a user stakeholder's perspective. As shown in Figure 9.1, the model consists of three components: (i) the user stakeholders; (ii) the IT governance decision makers; and (iii) the key mechanisms of IT governance.

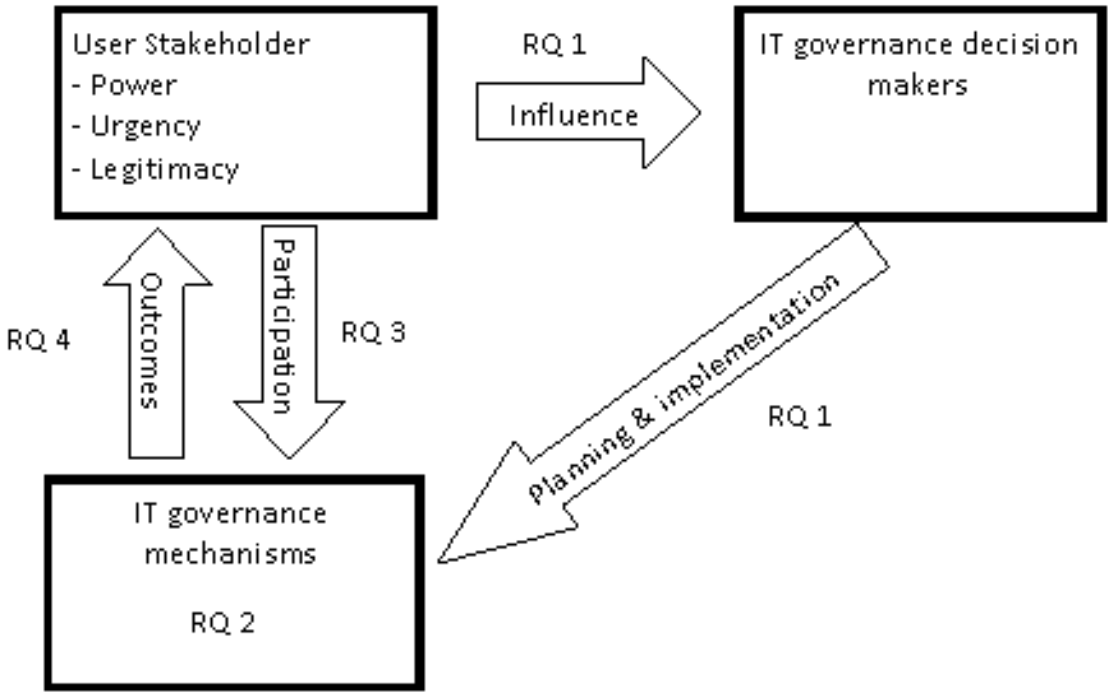


Figure 9.1: The research model showing application of research questions.

The components of the model are linked by arrows which represent the relationship between the components. That is, user stakeholders influence the IT governance decision makers who determine the selection and implementation of the mechanisms of IT governance, these in turn influence the outcomes of IT governance. The three outcomes

of IT governance are the areas identified from the literature (see Chapter Two): (i) IT alignment with business goals; (ii) efficient use of IT resources; and (iii) effective IT risk management. The user stakeholders experience the outcomes and through participation in the ongoing IT governance mechanisms attempt to also influence the outcomes. The level of participation in the mechanisms is determined at the planning and implementation stages.

The model does not suggest that user stakeholders are the only influence on the mechanisms of IT governance. What the model does illustrate is that user stakeholders are an important influence in IT governance that should be considered in the IT governance planning and implementation process. The next sections discuss the research findings in relation to each of the components of the model.

9.4.1 User stakeholder model component

The research findings indicate that users were identified as key stakeholders in the IT governance planning and implementation process. The inclusion of users as stakeholders resulted from a process of identifying their IT governance needs and their involvement in the issues of an IT governance nature that the university had recognised as part of its review process (see section 8.3). The identification of users as stakeholders was consistent with the literature (Freeman, 1984). The process used by the IT governance decision makers to identifying the stakeholders was also consistent with the research by Friedman and Miles (2002), although this research is unique in identifying the process in IT governance planning in a university setting.

The user stakeholder component of the model holds that the stakeholders have a role in the IT governance planning and implementation process. The research findings confirm that user stakeholders not only have a role in IT governance planning and implementation but that the role has been recognised and developed by the IT governance decision makers. The literature suggests that user involvement in IT governance although valued,

has been found to be limited and difficult to achieve (Grimes et al., 1999; Yanosky & McCredie, 2008).

The results of this research are consistent with the literature but extend the application of user involvement specifically to the influence they can exert in IT governance planning and implementation.

9.4.2 IT governance decision makers component of the model

The research found that the IT governance decision makers at the planning and implementation stage were the CIO and the business executive to whom the CIO reports. In one case (CS5) that had undertaken only a limited IT governance restructure, it was solely the CIO that was responsible for planning and implementation. CS6 had not yet commenced the planning and implementation of IT governance. The literature supports that strategic IT governance decisions should be made by the CIO in conjunction with the business executive (Gillies, 2008; Huang, et al., 2010). In all cases the VC exercised final approval over whether the implementation of IT governance would proceed and the final form or design it would take. Although determining final approval the VC did not participate in the actual design of the governance structure. The VC was found in all cases to be supportive of the changes, in CS6 the support was for a review to commence. High level support at the executive level of the organisation is described by the literature as an important contributor to IT governance succeeding (Barton, 2003; Nfuka & Rusu, 2011).

The VC's final approval was subject to user stakeholder acceptance at the faculty level, a condition which contributed to the influence of the faculties in the planning and implementation stage. The research found that the IT governance decision makers placed a great deal of importance on gaining the support of user stakeholder groups at the faculty level. Consequently the IT governance decision makers were found to be influenced by the faculty level user stakeholders for three reasons. (i) to ensure support for the implementation to proceed; (ii) to gain support for the IT governance structure so that its

ongoing operation would be successful; and (iii) to gain acceptance of the mechanisms of the IT governance structure to reduce the risk of user behaviour that may circumvent the IT governance mechanisms.

9.4.3 Mechanisms of IT governance component of the model

The literature does not specify individual mechanisms essential to IT governance but indicates IT governance will best be achieved through a formal, planned and coordinated group of mechanisms (De Haes & Van Grembergen, 2009; Nfuka & Rusu, 2011; Voloudakis, 2010). Similarly, the mechanisms component of the research model does not specify what individual mechanisms should be implemented but represents that IT governance necessitates the design and implementation of a coordinated group of mechanisms. Thus the model will be applicable to IT governance planning regardless of the individual mechanisms that are planned or implemented. The research found that each of the universities in the study that had implemented IT governance had undergone a planned, coordinated and formal process to implement the mechanisms of IT governance. The IT governance mechanisms implemented in the cases studied are those put forward by the literature (De Haes & Van Grembergen, 2009; Willson & Pollard, 2009), these are discussed in Chapter Two. The details of the IT governance mechanisms implemented in each case studied are discussed in Chapter Seven and summarised in section 9.3.

Although many of the mechanisms of IT governance were common to all the participating universities some of the mechanism did vary in the way they were implemented and operated. The variation of mechanisms found is consistent with the literature which held that IT governance was not dependent on any one mechanism (Weill & Ross, 2004b). The mechanisms found in each of the institutions did have some common purpose. These included: increasing user participation, increasing transparency of IT decision making, improving alignment with business objectives at all levels, improving IT risk management, and a more efficient use of IT resources across the university. The common purpose of the mechanisms is consistent with those expounded in the literature (De Haes & Van Grembergen, 2009; Willson & Pollard, 2009).

9.4.4 Influence of user stakeholders on the IT governance decision makers and the mechanisms of IT governance component of the model

The influence of the user stakeholders on the selection and implementation of the IT governance mechanisms is represented in the research model by the arrow pointing from the user stakeholder component to the IT governance decision maker's component. The research is unique in finding that user stakeholders did influence the mechanisms both in the IT governance planning stage and in implementation of the IT governance mechanisms through their influence on the IT governance decision makers.

The research found the degree of influence the user stakeholders exerted depended on two factors: (i) the urgency of the issue or need in question; and (ii) the power of the stakeholder or stakeholder group. Urgency and power as determinants of the strength of a stakeholder are well recognised in the literature (Mitchell et al., 1997). The application however, of urgency and power in respect of user stakeholders in IT governance situations in a university environment is not covered in the literature. The research addresses a gap in the literature dealing with the urgency and power of stakeholders in IT governance in universities in Australia.

As discussed in section 8.5, urgency of the user stakeholders in IT governance planning situations was found to be determined by two factors: (i) The level of demand the stakeholder group made for the needs to be addressed; and (ii) The level of importance the IT decision makers placed on the stakeholder's need. The literature identifies urgency as time sensitive and defines it in terms of the degree to which management can acceptably delay addressing the issue in question (Mitchell et al., 1997), which is consistent with the general findings of this research. The literature does not deal with the determinants of urgency of user stakeholders in IT governance situations and in this respect this finding is unique and addresses a gap in the literature.

The research found that the power of the user stakeholders was dependent on three criteria (see section 8.6): (i) attitude to the proposed IT governance structure; (ii) how important the group's support was to allow the restructure to proceed; and (iii) the status of the group in the eyes of the business executive. Stakeholder power is well discussed in the literature (Etzioni, 1964; Pfeffer, 1981; Mitchell et al., 1997) however the literature does not explore the criteria of user stakeholder power in IT governance planning in a university setting. The findings of this research help address the gap in the literature related to the three criteria of power of user stakeholders in IT governance planning and implementation. The mechanisms that were influenced by user stakeholders were those related to increasing user involvement in the IT governance process and those that improved user satisfaction, such as transparency of IT decision making. The survey of users conducted as part of this research (see section 6.4) found the principal aim of the user stakeholders in influencing the mechanisms of IT governance was twofold: (i) to better address their IT needs through closer alignment of the IT governance with business objectives at their respective levels; and (ii) to increase their control over the allocation of IT resources.

In summary, the research found that user stakeholders did in varying degrees, influence the mechanisms of IT governance in the IT governance planning and implementation, as is represented in the research model. Influence was exerted through the IT governance decision makers. The variations in influence resulted from the transient nature of urgency and power as well as the different levels of these two criteria that each group of user stakeholders held (see sections 8.5 and 8.6).

9.4.5 Planning and implementation of mechanisms

The arrow pointing from the IT governance decision makers component to the mechanisms of IT governance component of the research model indicate that the IT governance decision makers have implemented a coordinated group of mechanisms to achieve the expected outcomes of IT governance.

The outcomes of IT governance were identified by the IT governance decision makers in three categories (see Chapter Two): (i) alignment of business objectives with IT governance strategies; (ii) efficient use of IT resources; and (iii) management of IT risks. The outcome categories discussed in the literature (De Haes & Van Grembergen, 2009; Gheorghe, 2010; Willson & Pollard, 2009) is consistent with those identified in the case studies.

The literature recognises the connection between the mechanisms of IT governance and the achievement of the outcomes (De Haes & Van Grembergen, 2009; Gheorghe, 2010; Simonsson et al., 2010). The research findings are consistent with the literature in that the IT governance decision makers in the cases studied planned and implemented a group of coordinated mechanisms specifically designed to achieve the outcomes of IT governance. Evidence of the relationship of mechanisms to outputs were twofold (see Chapter Seven, section 7.2): (i) many of the IT governance mechanisms in the planning process were categorised by the IT governance decision makers according to the outcome or outcomes to which they would contribute; and (ii) the IT related issues due to non-achievement of the outcomes were mitigated or resolved by the implementation of the IT governance mechanisms. As discussed in the prior section the planning and implementation of the mechanisms of IT governance were influenced by the user stakeholders through the IT governance decision makers.

9.4.6 Outcomes of IT governance

The outcomes relationship of the IT governance model represents the outcomes of IT governance that will be experienced by the user stakeholders. The three outcomes identified in the model are consistent with those discussed in the literature (Gheorghe, 2010; Simonsson et al., 2010; Willson & Pollard, 2009), these are: (i) alignment of IT governance with the business objectives; (ii) efficient use of IT resources; and (iii) IT risk management. The research found that the outcomes recognised in the cases studied are also consistent with those represented in the research model.

The research also established that the IT governance decision makers in the cases studied that have adopted IT governance, all focused on outputs for four reasons: (i) to help identify stakeholders; (ii) to assist in identifying and categorising issues and unmet stakeholder needs that needed to be addressed; (iii) to assist in designing the IT governance mechanisms to meet the outcomes; and (iv) to enable monitoring and measurement of the success of the IT governance structure in order to review and fine tune the structure as necessary. The literature also refers to an output focus for the same reasons (Gheorghe, 2010; De Haes & Van Grembergen, 2009). The findings of the research are consistent with the literature, but are unique in establishing their application in universities in Australia.

9.4.7 Participation of user stakeholders in response to the outcomes

The research found that user stakeholders value the expected outcomes of IT governance and seek to be further involved, although at the individual level they do not believe this has or is likely to occur. At the faculty level it was found that user stakeholders do attempt to maximise their participation in order to secure the best outcomes from IT governance. The most commonly desired outcome was alignment of IT with business needs. These findings are consistent with the research model. The literature describes user participation as desirable (Agee, 2005; Yanosky & McCredie, 2008), and of particular importance in improving alignment with user needs (Trubitt & Overholtzer, 2009).

9.4.8 Model validation

The research model in its entirety holds that user stakeholders can influence the IT governance decision makers and in turn the mechanisms of IT governance that are planned and ultimately implemented. The mechanisms then contribute to the outputs of IT governance, which influences the user stakeholders to participate in the ongoing IT governance operations. As such the model promotes that users should be involved in the

IT governance planning and implementation as they will add value to the process. The universities participating in this research provide support for this contention. Each of the institutions that have implemented IT governance have adopted IT planning and implementation processes consistent with the research model and all have done so as they recognised the value of stakeholder involvement. The value of stakeholder involvement was illustrated by comments by the CIO's such as, "User input was valuable in identifying areas for improvement [in the IT governance plans] and gaining support for its [IT governance] operation and acceptance."

The success achieved through utilising the process represented by the model is evidenced by the reduction or elimination of serious IT governance related issues in each of the cases that have implemented IT governance. The comment by the CIO of CS2 was typical of the universities that had implemented IT governance, "Is the [IT] governance perfect, no. But it is a vast improvement over what we had before. We now have [IT] risk management across the whole university; we now have less duplication [of IT resources]; we have better alignment [of IT with business objectives]."

9.5 Generalisation and wider application of research

Two types of generalisation are described in the literature as analytical and statistical (Yin, 2003). Analytical generalisation is the application of the research findings to a theory of the phenomenon studied. The phenomenon studied in this research is the participation of user stakeholders in the IT governance process. The theory and findings of the research do contribute to the general literature and theory of effective IT governance. The generalisation is constrained by the limited context of universities that were studied and the consideration from the perspective of stakeholder theory.

Statistical generalisation is divided into two areas (Maxwell, 1992), these are: (i) internal generalisation, which applies within the setting subject to the research; and (ii) external generalisation or reliability that extends beyond the setting of the research (Onwuegbuzie & Leech, 2005).

The setting of this research is IT governance in Australian universities. A cross section of universities was selected (see Chapter Four) from categories that represented a variety of organisational backgrounds, cultures and characteristics. In terms of the population of public universities in Australia eight case studies representing 22% was selected, a relatively large sample. Internal generalisation or the ability to apply the findings of this research to other Australian universities is expected to be high.

External generalisation is more limited in that Australian universities have a unique structure and motivation that distinguish them from most other organisations. The modern university in Australia is a blend of business driven enterprise and traditional academic aspirations (Marginson & Considine, 2000). Despite their individuality, in many ways universities do resemble decentralised business organisations, with complex interactions between various faculties and other constituents. In organisations of similar structure and operation it is probable that the general findings of this research could be applied.

Generalisation can be enhanced by using a multi-site approach (Schofield, 1993) and by detailed reporting to allow the reader to conclude whether the findings can be extended to other settings (Mays & Pope, 2000). This research has increased generalisation by using a multi-site approach and by detailed reporting of the findings and underlying relationships of IT governance. The model of IT governance proposed is based on principles of good governance and in its general form is independent of the specific mechanisms that may be appropriate in individual cases to implement in support of good governance. With this in mind the model and associated mechanisms should be applicable to a wide range of diverse organisations. This would also be true of the responses to the research questions which are expressed in general terms.

9.6 Research limitations

There are some inherent limitations in this type of research and there are some specific weaknesses that have emerged as the study has progressed. The weaknesses have in some instances limited the conclusions that can be inferred from the research and in other cases have limited the application of the research to a wider range of organisations. The limitations are:

9.6.1 Limitations in the selection of Case Studies

Anecdotal information suggests that universities with poor IT governance were more likely to decline to be involved in the study. The three universities that did not respond to requests to be involved in the research were described by the CIO's interviewed as having problems with their IT. The sample may inadvertently be biased toward universities that had better governance structures. This is tempered by the fact that several of the case studies displayed and openly discussed IT governance structures that were less than ideal.

Six of the eight case studies were in transitional phases of reviewing and restructuring their IT governance structures. This made determining the current situation of their IT governance structures difficult to distinguish from what was planned. This also made some data collected through the survey less meaningful as comparisons between different governance structures was limited due to the absence in many cases of benchmark governance structures.

The study was limited to public universities in Australia which places an inherent limitation on the wider application of the outcomes of the research in the absence of further study. However, these public universities compete with each other for students (international and domestic) and for research grants, so they do operate in a competitive

environment. This gives the findings reasonable generality. Where possible the research findings have been generalised into broadly applicable principles to assist in the wider application of these findings.

9.6.2 Research Method Limitations

All studies have limits in that research methods don't go far enough. Although this research applied many methods, ideally other methods, such as focus groups, could also have been used to strengthen the findings. However, this study triangulated method by utilising case study and survey, and collected data from interviews, documents, websites, and the survey. As discussed in section 4.6 the verification of the data from a number of sources reduces the research method limitation.

As with all research there is the potential for researcher and interviewee bias. These were, as far as practical, overcome through the use of mixed methods and confirmation from different sources. The range of sources considered, in particular interviewees were selected from the IT area, the user areas, and from management, meant a variety of perspectives were considered. The effectiveness of interviewing a range of people to reduce bias was often illustrated through the diverse opinions gathered.

9.6.3 Theoretical Limitation

This research applied stakeholder theory to contribute to an understanding of the model and in interpreting the research findings. One theory was used to ensure clarity of the findings and a strong research focus. Stakeholder theory was selected for two reasons: (i) the literature highlights the importance of user stakeholders to IT governance success (De Haes & Van Grembergen, 2008, Fernandez, 2008; Gillies, 2008), so the consideration of the theory may provide a rich insight into the IT governance planning and implementation process; and (ii) one of the gaps in the literature is the lack of application of stakeholder theory to situations of strategic change and organisational performance

(Mainardes et al., 2011; Myllykangas et al., 2010), including to the planning and implementation of IT governance. There may be other organisational theories that will better explain some points of the research findings. Stakeholder theory has, however, yielded valuable findings and the application of other organisational theories will add to, not diminish the findings of this research.

The study of IT governance in complex organisations is by its very nature an extremely broad and, in many ways, ambitious undertaking. As such some aspects of stakeholder theory and the areas, to which they have been applied, are treated more superficially than they deserve. For example, users are a far more diverse and complex group than the research approach would suggest. This is a practical limitation governed by the research resources available.

9.6.4 Data Analysis Limitations

The research provides a static or snapshot view of a phenomenon as it exists at one point in time. IT governance involves dynamic processes that change and mature over time. The ideal research approach that would study this over a much longer period of five to ten years is impractical. The findings of this research could be used as a basis for comparison for further studies in the future, thus achieving a longer term view of IT governance.

IT governance and corporate governance are very complex and it may be that the research model does not fully explain this environment. Despite this limitation the model does make a valuable contribution to the theory and practice of IT governance. The model is developed from the literature (see Chapter Four) on IT governance and validated by analysis of cases of IT governance in practice. As such it illustrates and provides guidance on theoretical best practice that has been applied in practical situations. In addition the model has a stakeholder perspective that promotes an understanding of the value of user involvement that may not have previously been considered by those designing and implementing IT governance structures.

Any qualitative study interprets data from the spoken and written word, such interpretation influences the coding and subsequent analysis of the data. This effect has been explained in Chapter Four.

Although these weaknesses place limitations on the research they do not impact in any serious way on the data that has been collected nor the conclusions that have been drawn from the analysis of the data. Rather in most cases they opened up more avenues for future research.

9.7 Further research

This research has explored many aspects of IT governance in Australian universities. In doing so it has identified issues that would be of interest and warrant further investigation and research. In particular, it would be of interest to determine the extent that the IT governance experiences and issues found in the case studies are shared by other organisations. Further research could be pursued through widening the research to organisations other than universities.

The majority of case study universities examined in this research were in a state of flux. They had either recently completed major reviews of their IT governance structures and begun implementing or completed implementing revised IT governance structures. Follow up research into the effectiveness and other issues related to the IT governance restructures would be complementary and extend the research in this study. In particular it would overcome a limitation of this study by allowing a comparison of the findings of this research with the long term outcomes of the IT governance restructures that had not yet been finalised.

For example, when the IT governance structures have stabilised within the case study universities then it should be possible to assess more precisely the impact of the structures on user satisfaction levels and the level of participation of constituents. Further

research into the dynamic processes employed in these institutions may allow the cycle of planning and IT governance to be better understood and determined.

Further research could be pursued to explore the various influences on IT governance in more depth. Users in particular are the largest and most diverse group considered in this research. A deeper understanding of their interaction and influence on IT governance beyond what was possible in this study, offers opportunities for future research. More complex theories that recognise the social nature of users could be considered to provide a richer insight in this area.

9.8 Conclusion

The primary objective of this research was to determine if one of the key factors in the design and implementation of an IT governance structure is the influence of user stakeholder groups. These influences should be taken into consideration in the initial design and implementation of the IT governance process in Australian universities. This includes meeting the needs of the various stakeholders through achievement of the essential outcomes of alignment with business strategies, efficient use of IT resources, and comprehensive IT risk management. Four research questions were answered and a research model proposed and validated in order to address the primary objective of the research.

Based on the results of the study phases one to five, the key findings of this research were: (i) users have the potential to add value to the IT governance planning and implementation process; (ii) user support and acceptance is an important contributor to IT governance; and (iii) the influence of user stakeholders should be taken into consideration in IT governance planning and implementation.

The research findings reinforce the importance of responding to the user stakeholders IT governance needs in a timely and meaningful manner. Adopting a stakeholder theory

based approach enables an IT governance structure better able to identify, understand and respond to user needs.

It highlights to universities that they need to ensure stakeholders, including users, are involved in the design of the IT governance process and its ongoing operation. Failure to fulfil the needs of stakeholders can lead to abhorrent behaviour and adversely affect the IT governance operations. The research supports the image of IT governance as a dynamic and ongoing process that needs to be monitored and proactively managed to maintain its effectiveness. This study provides practical guidance to IT management and university executive on the importance of recognising the key influences on the design and ongoing operations of IT governance. The research model detailed in this study gives an informative guide to the critical user influences and their effect on the IT governance process. The research has demonstrated that IT governance is a complex process and to ensure its success, institutions should consider both the social and economic influences and impacts.

This research has addressed the gaps in the literature in two ways: (i) this research has developed a theoretical model that maps some of the key influences on IT governance mechanisms and outcomes; and (ii) this research has considered the IT governance process in the context of stakeholder theory. The consideration of stakeholder theory has added to the understanding of the key influences on the IT governance process.

In conclusion, taking into account the limitations identified, it is recommended that this research be extended to other organisations in both the private and public sector. In addition it is recommended that the research model be further developed to improve the quality of the findings and that more exploratory research be conducted on the relationship paths specified in the model.

References

Agee, A. (2005). The four pillars: A Framework for Improving IT Manage*ment. EDUCAUSE Quarterly*, 28 (4). Retrieved 11 August 2009 from http://www.educause.edu

Ali, S., & Green, P. (2009). Effective information technology (IT) governance mechanisms: An IT outsourcing perspective. *Information Systems Frontiers*, 14, 179 – 193. doi: 10.1007/s1079-009-9183-y

Allens Arthur Robinson. (2005). *Corporate Governance Site - CEO/ CFO sign off*. Allens Arthur Robinson. Retrieved 13 April 2006 from http://www.aar.com.au/corpgov

Allinson, C. (2002). Information Systems Audit Trails: An Australian Government Survey. *Journal of Research and Practice in Information Technology*, 34.

Allison, D., DeBlois, P., & the 2008 EDUCAUSE Current Issues Committee. (2008). Top-Ten Issues, 2008. *EDUCAUSE Review*, 43 (3). Retrieved 11 August 2009 from http://www.educause.edu

Australian Government Department of Education, Employment & Workplace Relations. (2007). *Financial Reports of Higher Education Providers.* Commonwealth of Australia. Retreived 19 October 2008 from: http://www.deewr.gov.au

Australian Government Department of Education Science & Training. (2004), *Research Expenditure, 2002, Selected Higher Education Statistics*. Commonwealth of Australia. Retrieved 17 July 2010 from http://www.deewr.gov.au

Australian Government Department of Education, Employment & Workplace Relations. (2008a). *Selected Higher Education Statistics 2008*. Commonwealth of Australia. Retrieved 17 July 2010 from: http://www.dest.gov.au

Australian Government Department of Education, Employment & Workplace Relations. (2008b). *Financial Reports of Higher Education Providers for 2007*. Commonwealth of Australia. Retrieved 17 July 2010 from http://www.deewr.gov.au

Australian Government Department of Industry, Innovation, Science, Research and Tertiary Education (2012). *Students: Selected Higher Education Statistics.* Commonwealth of Australia. Retrieved 12 November 2012 from http://www.innovation.gov.au

Babbie, E. (2010). *The Practice of Social Research. (12th Edition).* CA: Wadsworth Cengage Learning.

Baharein, K. (2008). Case Study: A Strategic Research Methodology. *American Journal of Applied Sciences*, 5(11), 1602-1604.

Banker, R., Hu, N., Pavlou, P., & Luftman, J. (2011). CIO reporting structure, strategic positioning, and firm performance. *MIS Quarterly*, 35(2), 487 – 505. Retrieved 21 July 2012 from http://search.proquest.com/

Bart, C., & Turel, O. (2010). IT and the Board of Directors: An Empirical Investigation into the Governance Questions Canadian Board Members ask about IT. *Journal of Information Systems*, 24(2), 147 – 172.

Barton, R. (2003). *Global IT Management: A Practical Approach*. London: Wiley.

Bhattacharjya, J., & Chang, V. (2007). Evolving IT Governance Practices for Aligning IT with Business – A Case Study in an Australian Institution of Higher Education. *Journal of Information Science and Technology*, 4(1), 24 - 46. Retrieved 7 November 2011 from www.jist.info

Blustain, H., & Goldstein, P. (2004). *Developing an Institutional Perspective on the Information Technology Function: The Case of Cornell University*. EDUCAUSE ECAR Case Study. Retrieved 3 July 2010 from http://www.educause.edu

Boesso, G., & Kumar, K. (2009). An investigation of stakeholder prioritization and engagement: Who or what really counts. *Journal of Accounting & Organizational Change*, 5(1), 62 – 80. doi:10.1108/18325910910932214

Boesso, G., & Kumar, K. (2007). Drivers of corporate voluntary disclosure.. *Accounting, Auditing & Accountability Journal*, 20(2), 269 – 296. doi:10.1108/09513570710741028

Bordoloi, C. (2012). First key to agile IT governance: Stakeholder satisfaction. *CIO*, Retrieved 1 May 2013 from http://www.cio.com/article

Braman, S. (2006). What do Researchers Need? Higher Education IT from the Researchers Perspective. *EDUCAUSE Occasional Papers*, ECAR. Retrieved 4 May 2008 from http://www.educause.edu

Bucher, J. (2001). *IT Service and Users Expectations: A Balancing Act. Viewpoint, EDUCAUSE Review*, May/June 2001, 62 – 63. Retrieved 7 June 2007 from http://www.educause.edu

Carnevale, D. (2007). The Most Poisonous Force in Technology. *The Chronicle of Higher Education.* June 22 2007. Retrieved 4 May 2008 from http://chronicle.com/article/the-most-poisonous-force-i/17655/

Cecez-Kecmanovic, D. (2005). Critical research in information systems: the question of methodology. *Information Systems Journal*, 15(2), 85 – 101. Retrieved 4 May 2008 from: http://is2.lse.ac.uk/asp/aspecis/20070023.pdf

Chester, T. (2006). A Roadmap for IT Leadership and the Next Ten Years. *EDUCAUSE Quarterly*, 29(2). Retrieved 4 May 2008 from http://www.educause.edu/

Creswell, J. (1998). *Qualitative inquiry and research design.* Thousand Oaks, CA: Sage.

Creswell, J. (2003). *Research Design: Qualitative, quantitative, and mixed methods approaches (2nd edition).* Thousand Oaks, CA: Sage.

Crossan, F. (2003). Research philosophy: towards an understanding. *Nurse Researcher*, 11 (1). Retrieved 4 May 2008 from http://nurseresearcher.rcnpublishing.co.uk

de Bussy, N. (2008). Applying stakeholder thinking to public relations: an integrated approach to identifying relationships that matter. In B. van Ruler, D. Vercic, & A. Vercic, (Eds), *Public Relations Metrics* (282 – 300). New York, NY: Routledge.

de Bussy, N., & Kelly, L. (2010). Stakeholders, politics and power. *Journal of Communications Management*, 14(4), 289 – 305. doi:10.1108/136325410110904

De Haes, S., & Van Grembergen, W. (2005). IT Governance Structures, Processes and Relational Mechanisms: Achieving IT/Business Alignment in a Major Belgian Financial Group. *Proceedings of the 38th Hawaii International Conference on Systems Sciences held on the Island of Hawaii January 3 – 6 2005*. Retrieved 7 November 2011 from http://www.computer.org/csdl/proceedings/hicss/index.html

De Haes, S., & Van Grembergen, W. (2008). Practices in IT Governance and Business/IT Alignment. *Information Systems Control Journal*, 2, 1 – 6. Retrieved 7 November 2011 from www.isaca.org/journal

De Haes, S., & Van Grembergen, W. (2009). An Exploratory Study into IT Governance Implementations and its Impact on Business/IT Alignment. *Information Systems Management*, 26(2), 123-137. doi:10.1080/10580530902794786

Denscombe, M. (1998). The *Good Research Guide for Small Scale Social Research Projects.* Buckingham Philadelphia: Open University Press.

Donaldson, T., & Preston, L. (1995). The stakeholder theory of the modern corporation: Concepts, evidence and implications. *Academy of Management Review* 20, 65-91. Retrieved 7 October 2010 from http://www.jstor.org/pss/258887.

Dowse, A., & Lewis, E. (2009). Applying organizational theories to realize adaptive IT governance and service management. In A. Cater-Steel (Ed.). *Information Technology Governance and Service Management* (313 – 331). Hershey, Pa: IGI Global.

Driscoll, C., & Crombie, A. (2001). Stakeholder legitimacy management and the qualified good neighbour: The case of Nova Nada and JDI. *Business and Society*, 40, 442 – 471.

Etzioni, A. (1964). *Modern organizations*. Englewood Cliffs, N.J.: Prentice Hall.

Fardal, H. (2007). IT strategy in an IT user perspective: exploring alignment between IT users and managers. *Issues in Informing Science & Information Technology, Annual*, 4, 661-673.

Farrar, D. (2010). Redefining IT Leadership: A Provost's Perspective. *EDUCAUSE Review*, 45(2). March/ April 2010, 62 – 63. Retrieved 10 September 2010 from http://www.educause.edu

Fernandez, L. (2008). An Antidote for the Faculty-IT Divide. *EDUCAUSE Quarterly*, 31, November, 2008. Retrieved 20 July 2010 from http://www.educause.edu

Fontaine, C., Haarman, A., & Schmid, S. (2006). *Stakeholder theory of the multi-national corporation.* Retrieved 20 July 2012 from http://edalys.fr

Freeman, R. (1984). *Strategic Management: A Stakeholder Approach*. Boston, MA: Pitman.

Freeman, R., Wicks, A., & Parmar, B. (2004). Stakeholder theory and the corporate objective revisited. *Organization Science*, 15(3), 364 – 369. Retrieved 10 September 2010 from http://my.t-bird.edu/files/

Friedman, A., & Miles, S. (2006). *Stakeholders: Theory and Practice*. New York: Oxford University Press.

Friedman, A., & Miles, S. (2004). Stakeholder Theory and Communication Practice, *Journal of Communication Management*, 9(1), 89 – 97.

Friedman, A., & Miles, S. (2002). Developing Stakeholder Theory. *Journal of Management Studies*, 39, Oxford: Blackwell Publishers Ltd.

Gable, G. (1994). Integrating case study and survey research methods: an example in information systems. *European Journal of Information Systems*, 3(2), 112 – 126. Retrieved 10 September 2010 from http://www.palgrave-journals.com/ejis

Gephart, R. (1999). Paradigms and Research Methods. *Research Methods Forum,* 4, Academy of Management Research Methods Division. Retrieved 17 July 2006 from: http://division.aomonline.org/rm/1999_RMDForum

Gheorghe, M. (2010). Audit Methodology for IT Governance. *Informatica Economica*, 14(1), 32-42. Retrieved 14 November 2011 from: Business Source Complete http://web.ebscohost.com.

Gheorghe, M. (2011). Risk management in IT governance framework. *Economia: Seria Management,* 14(2), 545.

Gillies, C. (2008). *Business Management of Information Technology: A practical guide for senior finance executives and business managers*. [Brochure] Melbourne Australia: CPA Australia.

Gillies, C. (2005). IT Governance – are Boards and Business Executives interested onlookers or committed participants. *Australian Accounting Review*, 15(3), 5 – 10.

Gillies, C., & Broadbent, M. (2005). *IT Governance: A Practical Guide for Company Directors and Corporate Executives.* [Brochure] Melbourne Australia: CPA Australia..

Glasow, P. (2005). *Fundamentals of Survey Research Methodology*. Washington, Virginia: MITRE.

Goldstein, P., & Pirani, J. (2008). *Views of the Top: Rising IT Leaders Discuss the CIO Position in Higher Education (Case Study 5)*. EDUCAUSE Center for Applied Research, 2008. Retrieved 17 July 2010 from http://www.educause.edu/ecar.

Grimes, J., Zingg, P., & Hanley, J. (1999). *User Empowered Process for Information Technology Planning and Implementation*, Paper presented at EDUCAUSE '99, 1999. Retrieved 17 July 2010 from http://net.educause.edu/ir/library/html/

Guildentops, E., (2004). Key success factors for implementing IT governance. *ISACA Journal*, 2. Retrieved 2 August 2012 from http://www.isaca.org/journal

Hancock, T. (2005). A hard "Act" to follow. *Corporate governance training and the impact of the Sarbanes-Oxley Act*. sai-global, 1 – 5. Retrieved 15 February 2006 from http://www.sai-global.com/newsroom

Hancock, I., & Parakala, K. (2008). IT governance - what are your obligations? *Keeping Good Companies*, 60(11), 659-663.

Huang, R., Zmud, R., & Price. B. (2010). Influencing the effectiveness of IT governance practices through steering committees and communication policies. *European Journal of Information Systems*, 19, 288-302. DOI 10.1057/ejis.2010.16

Hunton, J., Bryant, S., & Bagranoff, N. (2004). *Core Concepts of Information Technology Auditing*, Hoboken: John Wiley & Sons Inc.

ISACA IT Governance Institute. (2005). *Board briefing on IT governance.* ISACA IT Governance Institute Rolling Meadows, IL USA. Retrieved 20 June 2007 from http://www.Itgi.org

ISACA IT Governance Institute. (2003). *CobiT and Related Products, in Guidance materials for IT Governance.* ISACA IT Governance Institute Rolling Meadows, IL USA. Retrieved 20 June 2007 from http://www.Itgi.org

ISACA IT Governance Institute. (ND). *CobiT 5.0*. IT Governance Institute, ISACA, Rolling Meadows, IL USA. Retrieved 20 July 2012 from http://www.Itgi.org

ISACA IT Governance Institute & The Office of Government Commerce. (2005). *Aligning CobiT, ITIL and ISO 17799 for Business Benefit* ITGI ISACA and OGC Rolling Meadows, IL USA Retrieved 20 June 2007 from http://www.Itgi.org

Ismail, N. (2008). Information technology governance, funding and structure: A case analysis of a public university in Malaysia. *Campus-Wide Information Systems*, 25(3), 145 – 160. DOI 10.1108/10650740810886321.

Jiang, J., Klein, G., Wu, S., Liang, T. (2009). The relation of requirements uncertainty and stakeholder perception gaps to project management performance, *Journal of Systems and Software*, 82(5), 801-808. Retrieved 1 May 2013 from http://www.sciencedirect.com/science/article/pii/S016412120800263X

Johnson, R., & Onwuegbuzie, A. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come, *Educational Researcher*, 33(7), 14-26.

Judd, C., Smith, E., & Kidder, L. (1991), *Research Methods in Social Relations*. New York: Harcourt Brace Jovanovich College Publishers.

Kallenbach, P., & Scanlon, L. (2007). 10 steps to an IT governance catastrophe. *Keeping Good Companies*, 59(4), 246-247. Retrieved 10 October 2008 from http://search.informit.com.au.dbgw.lis.curtin.edu.au

Klein, H., & Myers M. (1999). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 23(1), 67 – 93. Retreived 8 August 2012 from http://search.proquest.com/docview/218119225

Kuhn, R., Brookes, K., & Bellos N. (2008). A Policy Based Approach to Technology Systems. *EDUCAUSE Quarterly*, 31(2). Retrieved 17 July 2010 from http://www.educause.edu

Land, F., & Hirschheim, R. (1983). Participative Systems Design: Its Rationale, Tools and Techniques. *Journal of Applied Systems Analysis*, 10, 91 – 107.

Laplume, A., Sonpar, K., & Litz, R. (2008). Stakeholder theory : Reviewing a theory that moves us. *Journal of Management*, 34(6), 1152 – 1189. doi: 10.1177/0149206308324322.

Lucy, J. (2004). FSR, CLERP 9 and surveillance programs: ASIC priorities over the next 12 months. *Australian Securities & Investment Commission*, Queensland, 13 March 2004.

Luftman, J., & Brier, T. (1999). Achieving and sustaining business-IT alignment. *California Management Review*, 42(1), 109 – 122. Retrieved 10 August 2012 from http://search.proquest.com/docview/216149802

Mainardes, E., Alves, H., & Raposo, M. (2011). Stakeholder theory: issues to resolve. *Management Decision*, 49(2), 226 – 252. doi: 10.5430/jms.v1n1p76

Marginson, S., & Considine, M. (2000). *The enterprise university: power, governance and reinvention in Australia.* Melbourne: Cambridge University Press.

Maxwell, J. (1992). Understanding and Validity in Qualitative Research. *Harvard Educational Review,* 62 (3), 279. Retrieved 30 July 2012 from http://www.scribd.com/doc/54081593

Mays, N., & Pope, C. (2000). Qualitative research in health care: Assessing quality in qualitative research. *British Medical Journal,* 320 (7226), 50 – 52.

Macquarie Dictionary (5th ed.). (2009). Sydney, NSW: The Macquarie Library Pty Ltd..

McRobbie, M. (2006). Re-centering the Research Computing Enterprise. *Educause Review,* 41(3), 84-85. Retrieved 19 October 2008 from http://www.educause.edu

Meyer, D. (2006). The Cost of Decentralization. *CIO,* June 28, 2006. Retrieved 19 October 2008 from www.cio.com/articles .

Michalak, S., Facelli, J., & Drew, C. (1999). Decentralized Information Technology Requires Central Coordination! *Cause/Effect Journal*, 22(4). Retrieved 19 October 2008 from http://net.educause.edu/ir/library/html

Miles, M., & Huberman, M. (1994). *Qualitative Data Analysis*. Thousand Oaks, CA: Sage Publications.

Miller, F. (2002). Organizing Information Professionals on Campus. *Educause Quarterly*, 4, 46 -51. Retrieved 17 July 2010 from http://www.educause.edu

Mitchell, R., Agle, B., & Wood, D. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *The Academy of Management Review,* 22(4), 853 – 886. Retrieved 3 July 2010 from http://www.jstor.org/stable/259247

Musson, D., & Jordan, E. (2005). The Broken Link: Corporate Governance and Information Technology. *Australian Accounting Review,* 15(3), 11 - 20.

Myers, M. (1997). Qualitative Research in Information Systems. *MIS Quarterly*, 21(2), 241 – 242. MISQ Discovery, archival version. Retrieved 3 July 2010 from http://www.misq.org/discovery/MISQD_isworld/

Myers, M., & Klein, H. (2011). A set of principles for conducting critical research in information systems, *MIS Quarterly*, 35(1), 17 – 36. Retrieved 8 August 2012 from http://search.proquest.com/

Myllykangas, P., Kujala, J., & Lehtimäki, H. (2010). Analyzing the essence of stakeholder relationships: What do we need in addition to power, legitimacy, and urgency: *Journal of Business Ethics,* 96, 65 – 72. doi: 10.1007/s10551-011-0945-3

Neill, J. (2007). Qualitative versus Quantitative Research: Key points in a Classic Debate, *Research Methods*. Retrieved 17 July 2010 from http://wilderdom.com

Neuman, W. (2006). *Social Research Methods*, Sixth edition, Sydney, NSW: Pearson International.

Nfuka, E., & Rusu, L. (2011). The effect of critical success factors on IT governance performance. *Industrial Management & Data Systems*, 111(9), 1418 – 1448. doi: 10.1108/02635571111182773.

Nolan, R., & McFarlan, F. (2005). Information Technology and the Board of Directors. *Harvard Business Review*, 83(10), 96.

Okunoye, A., Frolick, M., & Crable, E. (2008). Stakeholder influence and ERP implementation in higher education. *Journal of Information Technology Case and Applications Research*, 10(3). Retrieved 21 July 2012 from http://www.proquest.com

Onwuegbuzie, A., & Leech, N. (2005). A typology of errors and myths perpetuated in educational research textbooks. *Current Issues in Education [online]*, 8(7). Retrieved 1 August 2012 from http://cie.asu.edu

Parent, M., & Reich, B. (2009). Governing Information Technology Risk. *California Management Review*, 51(3), 134 – 152.

Penrod, J. (2003), Organizing and Managing Information Resources on Your Campus, in P McClure (ed.), *Building an Effective Governance and Decision-Making Structure for Information Technology*, (15 – 28). Thousand Oaks, CA: John Wiley & Sons.

Perry, C. (1998). Processes of a case study methodology for postgraduate research in Marketing. *European Journal of Marketing*, 32(9/10), 775 – 802.

Pfeffer, J. (1981). *Power in organizations*. Mansfield, Mass.: Pitman Publishing.

Phillips, R. (2003). Stakeholder Legitimacy. *Business Ethics Quarterly*, 13(1), 25 – 41. Retrieved 20 July 2012 from http://web.ebscohost.com.dbgw.lis.curtin.edu.au/

Pirani, J., & Salaway, G. (2008). *Queensland University of Technology: Three generations of IT governance (and counting)*. EDUCAUSE Center for Applied Research. Retrieved 17 July 2012 from http://www.educause.edu/ecar .

Pirani, J., & Yanosky, R. (2005). *Process and Politics: IT Governance in Higher Education Roadmap (Roadmap)*. EDUCAUSE Center for Applied Research. Retrieved 17 July 2010 from http://www.educause.edu/ecar .

Rau, K. (2004). Effective Governance of IT: Design Objectives, Roles, and Relationships, *Information Systems Management*, 21(4), 35-42.

Ryan, R., & Raducha-Grace, T. (2010). *The business of IT: how to improve service and lower costs.* Upper Saddle River, NJ: IBM Press.

Rytmeister, C. (2009). Governing University Strategy: Perceptions and practice of governance and management roles. *Tertiary Education and Management*, 15(2), 137 – 156.

Santana, A. (2012). Three elements of stakeholder legitimacy. *Journal of Business Ethics*, 105(2), 257 – 265. doi: 10.1007/s10551-011-0966-y

Schneberger, S., Pollard, C., & Watson, H. (2009). Theories: For Academics and Practitioners. *Information Systems Management*, 26(1), 52-60. Retrieved 13 November 2011 from http://dx.doi.org/10.1080/10580530802384738

Schofield, J. (1993). Increasing the generalizability of qualitative research. In M. Hammersley (Ed.), *Social Research: Philosophy, Politics and Practice* (200 – 225). London: Open Univeristy and Sage.

Shadish, W., Cook, T., & Campbell , D. (2002). *Experimental & Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton Miffin.

Shattock, M. (2012). Perspectives. *Policy and Practice in Higher Education*, 16(2). Retrieved 10 August 2012 from http://www.tandfonline.com

Simonsson, M., Johnson, P., & Ekstedt, M. (2010). The Effect of IT Governance Maturity on IT Governance Performance, *Information Systems Management*, 27(1), 10-24.

Smudde, P., & Courtright, J. (2011). A holistic approach to stakeholder management: a rhetorical foundation. *Public Relations Review*, 37, 137 – 144. doi: 10.1016/j.pubrev.2011.01.008

Sonpar, K., Pazzaglia, F., & Kornijenko, J. (2010). The paradox and constraints of legitimacy. *Journal of Business Ethics*, 95(1), 1 – 21. doi: 10.1007/s10551-009-0344-1

Spicer, D., & Pirani, J. (2008). *Reforming IT Governance at Berkley: Introducing an Enterprise Perspective to a Decentralised Organisation*. EDUCAUSE ECAR Case Study 3, 2008. Retrieved 3 July 2010 from http://www.educause.edu .

Standards Australia Committee. (2005). Corporate governance of information & communication technology, vol. AS 8015 - 2005. *Standards Australia*, Australian Standard.

Stoney, C., & Winstanley, D. (2001). Stakeholding: Confusion or utopia? Mapping the conceptual terrain. *Journal of Management Studies*, 38(5), 603 – 626.

Tellis, W. (1997). Application of a Case Study Methodology. *The Qualitative Report*, 3(3). Retrieved 4 April 2007 from http://www.nova.edu

Terry, J., & Standing, C. (2004). The value of user participation in e-commerce systems development. *Informing Science Journal*, 7, ECU Publications. doi: ecuworks/3626.

Trubitt, L., & Overholtzer, J. (2009). Good Communication: The Other Social Network for Successful IT Organisations. *EDUCAUSE Review*, 44(6), November/December 2009, 90 – 101. Retrieved 17 July 2010 from http://www.educause.edu

Uehara, K., & Akino, S. (2010) Soft IT Governance. *Journal Online ISACA Journal*, 1. Retrieved 3 April 2011 from www.isaca.org

Voloudakis, J. (2010). *IT Organizations: Balancing Centralized Efficiencies with Localized Needs.* (Research Bulletin 9, 2010). EDUCAUSE Center for Applied Research. Retrieved 3 April 2011 from http://www.educause.edu/ecar

Waggener, S. (2010). The future and Challengers of IT Shared Services. *EDUCAUSE Quarterly*, 33(1). Retrieved 3 April 2011 from http://www.educause.edu

Waggener, S., & Rickards, J. (2007). The Organization of the Organization: CIOs' Views on the Role of Central IT. *EDUCAUSE Review*, 42(6), 24 – 53. Retrieved 10 March 2009 from http://www.educause.edu

Waugh, W. (2003). Issues in University Governance: More "Professional" and Less *Academic. American Academy of Political and Social Science*, 585, 84 – 96. Retrieved 21 June 2012 from http://www.jstor.org/stable/1049752

Weill, P. (2004). *Don't Just Lead, Govern, How Top Performing Firms Govern IT*. Cambridge Massachusetts: Massachusetts Institute of Technology.

Weill, P., & Ross, J. (2004a), *IT Governance on One Page*. Cambridge Massachusetts: Massachusetts Institute of Technology.

Weill, P., & Ross, J. (2004b). *IT Governance: How top performers manage IT decision rights for superior results*. Boston, Massachusetts: Harvard Business School Press.

Wilkin, C., & Chenhall, R. (2010). A Review of IT Governance: A Taxonomy to Inform Accounting Information Systems. *Journal of Information Systems*, 24 (2), 107 – 146. DOI 10.2308/jis.2010.24.2.107

Williamson, K. (2000). *Research methods for students and professionals*, Wagga Wagga, NSW: Centre for Information Studies Charles Sturt University.

Willson, P., & Pollard, C. (2009). Exploring IT Governance in Theory and Practice in a Large Multi-National Organisation in Australia. *Information Systems Management*, 26(2), 98-109.

Winkler, I. (2009). Stakeholder salience in corporate codes of ethics. *Electronic Journal of Business Ethics and Organisation Studies*, 14(1). Retrieved 21 July 2012 from http://ejbo.jyu.fi/

Yanosky, R., & McCredie J. (2008). *Process and Politics: IT Governance in Higher Education*. Research Study 5 from the EDUCAUSE Center for Applied Research, 5. Retrieved 11 August 2009 from http://www.educause.edu

Yin, R. (2003), *Case Study Research*, 3rd edn, Thousand Oaks, CA: SAGE.

Yin, R. (1994), *Case Study Research: Design and Methods*, 2nd edn, Thousand Oaks, CA: SAGE.

Young, I. (2004). University governance: there is more than one model. *Conference paper presented to a Business/Higher Education Round Table, Sydney, NSW*. Retrieved 17 July 2010 from http://www.bhert.com/events_pasteventsunigovernance.htm

Appendix 1: Invitation letter to organisations participating in the research.

<DATE>

<NAME>
<POSITION>
<ADDRESS>

Dear <NAME>

Subject: <UNIVERSITY NAME> Participation in PhD Research Project

We are writing to you to formally request your university's participation in a research project that is being undertaken as part of the requirements for fulfilment of a Doctoral Degree by Michael Hicks.

The research gathers information about the governance of Information Technology in Australian universities. The information gathered in this research will be of significant importance to both the information technology profession and Australian universities.

Your participation in this research would involve formal interviews and where possible, the provision of archival data that would help clarify and explain issues discussed in the interviews. These interviews will be conducted with key individuals who were involved in the information technology governance process. Please find attached a brief summary that details the research questions that will be addressed and the initial conceptual model identified. Also attached is a copy of the research instrument that will be used in the interview.

The information that you provide will be held in the strictest of confidence and all normal safeguards to ensure confidentiality and protection of your university will be followed. If required, a statement or declaration of confidentiality would also be signed by the researcher and supervisor.

If you have any questions, please contact Michael Hicks on (08) 9266 2027 or email address: m.hicks@curtin.edu.au.

Your participation and support in this research project would be greatly appreciated and we look forward to meeting with you soon.

Yours faithfully

Michael Hicks
Doctoral Student
Curtin University of Technology

Professor Graham Pervan
Supervisor
Curtin University of Technology

Appendix 2: Case study protocol.

Case Study Protocol And Research Instrument

Prepared by: **Michael Hicks**

Date: **18 January 2008**
Revised: **10 October 2008**

Table of Contents

GENERAL SECTION

This section summarises the research that will be undertaken in respect of the:
(a) Project objectives;
(b) Significance of the research;
(c) Research methodology that will be used.

1.1 Overview of the Research Project

This research project is investigating the relationship between the key influences on the mechanisms of IT governance that are in place at the strategic level in Australian universities and the level of effective IT governance that the university achieves. More specifically the research focuses on determining the influences on the IT governance structures being used and whether these key structures are likely to contribute to outcomes of a greater contribution to IT and business goal alignment, an increase in the effective use of IT resources, and lead to an improvement in IT risk management.

In line with the research objectives the purpose of the case studies is to provide the opportunity to interview Business management, IT management, User management, and end users in selected Australian universities. During the interviews the types of IT governance structures in place and their contribution to effective IT governance in research, and teaching and learning, will be discussed. The data that is collected during the interviews, in addition to other documentation and background that is gathered will be analysed and evaluated to develop a model of the influences on the effectiveness of IT governance in Australian universities.

This process model will be designed to contribute to the understanding of how the strategic level IT governance constructs and mechanisms will contribute to the attainment of a high level of effective IT governance in research activities and teaching and learning in the university. This will assist universities in identifying best practice criteria for IT governance and related processes as conceptually represented by the preliminary process model shown in appendix B. This model will be revised as the study progresses.

1.2 Research Methodology

The research will employ a qualitative approach, collecting data through a preliminary phase and a further two phases consisting of a pilot case study and then a larger number of case studies. Using a case study strategy will permit the in-depth study of IT governance influences and constructs within several individual Case Study Universities. As Denscombe (1988) points out the use of case studies allow a variety of sources, data, and research methods to be employed by the researcher, this permits a flexible and thorough approach. The three phases in more detail are:

- Phase One: Development of a preliminary research model.
- Phase Two: Pilot case study
  - Step One: Conduct interviews and analyse qualitative data collected.
  - Step Two: Conduct user surveys and analyse quantitative data collected.
  - Step Three: Refine preliminary research model.
- Phase Three: Case studies

- Step One: Conduct interviews and analyse qualitative data collected.
- Step Two: Conduct user surveys and analyse quantitative data collected.
- Step Three: Final adjustment and validation of research model.

Phase Two is the focus of this Case Study Protocol. The protocol outlines the procedures that will be used in the pilot case study. The instrument that will be used to guide the interviews and provide a framework for data gathering is also contained in this document. The questions in the instrument are designed to establish the main components of the research model. A general guide for the data analysis of the data gathered in the pilot case study is also included in this protocol.

PROCEDURES

2.1 Initial Approach to Case Study Universities

2.11 Selection of Cases

Case studies for this research will be selected on the basis of theoretical sampling. The study will focus on Australian public universities. This phase will involve a pilot study to finalise the case study protocol through semi-structured interviews with staff involved in the governance of information technology within the Case Study University.

a. Number of Cases

Whether the insights provided by the pilot study can be extrapolated to Australian based universities in general will be determined through a number of additional case studies. A strategy of diverse sampling will be used to select the case studies to permit the generalisation of the conceptual model being developed.

To allow "cross case" analysis it is intended to conduct eight case studies of public universities in Australia.

b. Establishing Contact

It is planned that interviews will be conducted with key individuals that participate in strategic IT governance within the Case Study University. These may include any of the following designations; The Chief Information Officer (CIO), the person that the CIO reports too, Representatives of other levels of IT management, and Representatives of the IT user management (Teaching and learning, and Research).

It is suggested that initial contact be informally established with each Case Study University. A meeting will be arranged with a nominated contact person to whom a copy of this case study protocol will be made available.

During this initial meeting the researcher will seek approval to make formal contact through an official letter requesting the Case Study

Universities participation in the research (see the attachment at appendix A)

c. Confidentiality and Case Study University Approval

The collection of confidential information concerning the Case Study University will be necessary during the conduct of the research. All normal safeguards to ensure confidentiality and protection of the Case Study University will be followed. Data will be collected and stored according to guidelines for research as published at http://www.health.gov.au/nhmrc/research/general/nhmrcave.htm. These are the general guidelines for research as adopted and recommended by Curtin University of Technology.

In addition the case study research data will be made anonymous to prevent the identification of the Case Study University. If required, statements or declarations of confidentiality will also be signed by the researcher and supervisors if requested by the Case Study Universities.

d. Archival Data

Case Study Universities may be requested to provide archival data that will assist in establishing the background and organisational structure of the Case Study University. The archival data that may be required include; organisational charts, business plan, IT plan, and performance reports.

2.2 Scheduling of Interviews

Once the organisation has agreed to participate, the researcher will contact the interviewee(s) to arrange a suitable interview time. Contact with the organisation will be maintained through the initial contact person.

2.21 Length of Interview Sessions

Interview sessions, which will be digitally recorded, will be limited to approximately 60 minutes. Follow-up interviews may need to be arranged in situations where complete coverage of the questions in the interview schedule could not be done. If necessary follow-up visits will be arranged to collect any documentary and other data for analysis.

2.22 Timeframe

All interviews will be conducted over the approximate period of 3 months. Feedback and transcripts from the interview sessions will be supplied to the Case Study University for checking within two weeks of the completion of the interview.

2.23 Range of Interviewees and instruments

In order to gather comprehensive data from diverse sources a range of different levels of management and user of information technology within the organisation will be interviewed. Questions will be tailored to the different interviewees and their respective roles. Interviewees will include:

1. Chief Information Officer (CIO). The purpose of interviewing the CIO is to gather background information on the nature and scale of the IT operations. In

addition the degree of participation of the IT area in designing, implementing, and operating IT governance constructs will also be ascertained.

2. The person that the CIO reports too. The purpose of interviewing this person is to determine any areas of concern within the IT governance structure and to gain a high level view of the relationship between corporate governance and IT governance within the university. The interview questions at this level will be very open ended.
3. User level management
    a. Heads of School. The purpose of interviewing Heads of School will be to determine the degree of participation of the academic areas in the process of IT governance. The effectiveness of IT governance from the perspective of the academic areas will also be ascertained.
    b. Dean of Research in a faculty. The purpose of interviewing a Dean of Research in a faculty will be to determine the degree of participation of the research function in the process of IT governance. The effectiveness of IT governance from the perspective of the research function will also be ascertained.
    c. Director Office of Research and Development. The purpose of interviewing the Director of Research and Development will be to determine any areas of concern within the IT governance structure in respect of the research function and the degree of effectiveness of IT governance in supporting the strategic research activities of the university.

RESEARCH INSTRUMENT FOR ORGANISATIONAL PROFILE

Section 3 contains the research instrument that will be used to gather information about the organisation through document and web based searches. This background information will be used to create an organisational profile prior to commencement of interviews. Sources of this type of information will include:

- Annual reports.
- Web sites.
- Government information.
- Research details, such as RPI.

Q1	Questions relating the structure of the Case Study University: (a) What is the business decision making structure in the university? (b) What is the structure of the IT function (Centralised / Decentralised)? (c) How many campuses does the university operate?
Q2	Questions relating to the culture of the university: (a) What is the history of the university? (b) What is the orientation of the university in terms of teaching and research? (c) How many students does the university have internally enrolled? (d) What are the major sources of funding for the university?

RESEARCH INSTRUMENT FOR CIO / IT MANAGEMENT

Section 4 contains the research instrument that will be used to gather information through interviews of the CIO (Chief Information Officer) and examination of

associated documentary evidence. This section consists of five categories each of which corresponds to a key component of the process model being developed.

The purpose of interviewing IT management is twofold; firstly to gather background details of the nature and scale of the IT operations, including specifically IT governance constructs and mechanisms that may be in place. Secondly to ascertain the degree of participation of the IT area in designing, implementing, and operating such structures.

4.1 Respondent Personal Details

Q1	Questions relating to the person interviewed: (a) What is your job title? (b) How long have you occupied this position? (c) What is your general background (ie management or IT technical) and experience? (d) What formal qualifications do you have?
Q2	Questions relating to the position of the person being interviewed: (a) What are the major responsibilities of your position? (b) Where does your position fit in the IT management structure? (c) Where does your position fit in the business management structure? (d) How many direct subordinates does your position have? (e) To which position do you report / are responsible?

4.2 IT Governance Mechanisms & Constructs

The key objective of this section is to determine:

- The strategic IT governance mechanisms and constructs that are in place within the institution.
- Who participates in these mechanisms and constructs.
- How the mechanisms and constructs operate.

Q3	Decision making mechanisms: (a) What is the process in the University for making strategic IT decisions? (b) Who is involved in the strategic IT decision making process (ie key members of IT steering committee etc)? Are you satisfied with the composition of the IT steering committee?
Q4	User involvement: (a) How are users involved in strategic IT decisions generally? (b) How are users involved in strategic IT decisions that will specifically affect them? (c) Have you been generally satisfied with the support for the IT area from the operational areas?

Q5	Matching of IT and business management styles: (a) How would you describe your management style? (b) How would you describe the university's management style? (c) In your view are the two styles of management compatible?
Q6	Budgeting process: (a) What strategic IT budgets are formulated in the university? (b) What is the process used to establish each of these budgets? (c) Who is involved in setting the budgets? (d) How are you involved in the determination of the IT budget? (e) Are you satisfied with the IT budget generally? (f) What is your view of the budgeting process?

4.3 Effectiveness of IT governance

The key objective of this section is to determine:

- The effectiveness of the IT governance system that is in place in the Case Study University.

Q7	(a) Are you satisfied with the level of support given to IT strategic decisions by the executive management? (b) Do you believe the university long term business plan uses the strategic capability of IT? (c) Does the IT plan correspond to the resources allocated to IT in the business plan? (d) Please rate in order the most problematic areas experienced by the IT area in the last 12 months and what you expect will be the most problematic areas over the next 12 months? (i) Staff retention. (ii) Financial resources. (iii) Other resources. (iv) Business management support. (v) Technical issues. (vi) Security issues. (vii) Complying with legal requirements. (viii) Maintaining university competitive advantage. (ix) Cost control. (x) Increasing flexibility to respond to opportunities quicker. (xi) Creating competitive advantage through innovation. (xii) Other, please specify. (e) What are the most challenging general issues the IT area is currently facing? (f) What are the most challenging IT related issues the IT area is currently facing? (g) What are the most challenging general issues the IT area will be facing in the long term? (h) What are the most challenging IT related issues the IT area will be facing in the long term?

4.31 IT & Business Goal alignment

The key objective of this section is to determine:

- The mechanisms in place to achieve alignment of the IT and business goals in the Case Study University.

Q8	Decision making: (a) Does the CIO regularly attend general business planning meetings? (b) Does the Vice Chancellor or other senior executive regularly attend the IT steering committee?
Q9	IT and business plan: (a) Does the business plan refer to the IT plan? (b) In your opinion does the business plan uses the strategic capability of IT?
Q10	Alignment generally: (a) How is the alignment of IT strategic goals with business strategic goals achieved? (b) Do you believe this alignment has been successful?

4.32 Effective use of IT resources

The key objective of this section is to determine:

- The effectiveness of the use of IT resources within the Case Study University.

Q11	User Satisfaction: (a) Which aspects of user satisfaction with IT services, initiatives and other products are measured? (b) How are these aspects measured? (c) When are these aspects measured? (d) Are these measures acted upon?
Q12	User Expectations: (a) How are the expectations of the user or potential user measured? (b) What action is taken with the outcomes of the measurement of user expectations.
Q13	Major IT initiatives and projects: (a) What project management procedures are followed when undertaking major IT initiatives?

4.33 IT risk management

The key objective of this section is to determine:

- The comprehensiveness and effectiveness of the IT risk management constructs and procedures.

Q14	(a) Whose task is it to manage IT risk? (b) What strategies does the university have to identify IT risks? (c) What are the strategic IT risk factors the university faces? (d) How are these strategic IT risk factors managed?

4.4 Monitoring Systems & Metrics

The key objective of this section is to determine:

- The IT governance monitoring systems and associated metrics used within the Case Study University.

Q15	(a) Are any of the following methods and metrics used to measure the success of IT in your organisation at the service, operational and strategic level? (i) Balanced scorecard. (ii) Return on Investment (ROI). (iii) Economic Value Added (EVA). (iv) Charge back. (v) Service level agreements. (vi) IT Maturity Model. (vii) Other, please specify (b) What other methods and metrics are used to monitor the success of IT initiatives and ongoing operations? (c) To whom and how often are these reports/ evaluations of IT provided? (d) What action is taken on these reports/ evaluations (ie how are the results reviewed and actioned)?

RESEARCH INSTRUMENT FOR PERSON TO WHOM CIO REPORTS

Section 5 contains the research instrument that will be used to gather information through interviews of the person to whom the CIO reports. This section consists of very open ended questions to encourage as insightful responses as possible.

The purpose of interviewing the person to whom the CIO reports is primarily to highlight any areas of concern within the IT governance process and to gauge the degree of high level satisfaction with both the current and future direction of the IT governance process.

5.1 Respondent Personal Details

Q1	Questions relating to the person interviewed: (a) What is your job title? (b) How long have you occupied this position? (c) What is your general background (ie management or IT technical) and experience? (d) What formal qualifications do you have?
Q2	Questions relating to the position of the person being interviewed: (a) What are the major responsibilities of your position? (b) Where does your position fit in the IT management structure? (c) Where does your position fit in the business management structure?

5.2 IT Governance Processes

Q1	In your view what have been the major achievements for the university in terms of IT strategic initiatives in the last year?
Q2	In your view what have been the major concerns for the university in terms of the IT function at the strategic level in the last year?
Q3	What vision do you hold for the IT function at the strategic level over the next 5 years? (ie what major initiatives are planned)
Q4	How do you see these long term initiatives supporting the strategic business objectives of the university?
Q5	Up to now how successful do you believe the IT function has been in supporting the strategic business objectives of the university?
Q6	What do you believe will be the major challenges for the IT function at the strategic level in the longer term (ie next 5 years)?
Q7	If you could make one major change to improve the IT function at the present time what would it be and why?

RESEARCH INSTRUMENT FOR USER LEVEL MANAGEMENT (Academic – heads of school, research – a head of research and the Director of research)

Section 6 contains the research instrument that will be used to gather information from the interviews of user level management. User level management will include a Head of School as representative of the teaching areas, a Head of Research as representative of the research function, and a manager of a corporate area as a representative of the various corporate functional areas. These details will be used to ascertain the degree of participation of users in the process of IT governance. User level responses will also be used to assist in gauging the effectiveness of some aspects of the IT governance process.

Q1	Questions relating to the person interviewed: (a) What is your job title? (b) How long have you occupied this position? (c) What is your general background (ie management or IT technical) and experience? (d) What formal qualifications do you have?

Q2	Questions relating to the position of the person being interviewed: (a) What are the major responsibilities of your position? (b) Where does your position fit in the University management structure? (d) How many direct subordinates does your position have? (e) To which position do you report / are responsible?

6.1 IT Governance Constructs and Mechanisms

The key objective of this section is to determine:

- The strategic IT governance mechanisms and constructs that are in place within the institution.
- Who participates in these mechanisms and constructs.
- How the mechanisms and constructs operate.

Q3	Questions relating to user involvement in the IT decision making process: (a) How are you involved in the decision making process for IT related issues in respect of your (academic/ research/ corporate administration) area of the University? (b) Have you been generally satisfied with the support for your area from the IT area at the strategic and operational levels? (c) How are you involved in the decision making process for general business related issues in respect of your (academic/ research/ corporate administration) area of the University? (d) Have you been generally satisfied with the support for your area from the University executive at the strategic and operational levels?
Q4	Questions relating to the alignment of IT services and initiatives with the business needs of users: (a) What are the most challenging general issues the academic areas are currently facing? (b) What are the most challenging IT related issues the academic areas are currently facing? (c) In your view what are the most challenging general issues the academic areas will be facing in the long term? (d) In your view what are the most challenging IT related issues the academic areas will be facing in the long term?

6.2 Monitoring Systems & Metrics

The key objective of this section is to determine:

- The IT governance monitoring systems and associated metrics used within the Case Study University.

Q5	(a) What is your view of the formal process for you or your staff to provide feedback to the IT management on your satisfaction with the services and initiatives provided by the IT area at the strategic and operational level? (b) To whom and how often is this formal feedback requested from you or your staff? (c) What action is taken by the IT management on these formal reports/ evaluations (ie how are the results reviewed and actioned)? (d) How do you informally provide feedback to the IT management on your satisfaction with the services and initiatives provided by the IT area at the strategic and operational level?

RESEARCH INSTRUMENT FOR USER LEVEL (Academic and research staff)
Section 7 contains the research instrument that will be used to gather information from the interviews and surveys of the user level in research academic teaching areas. User level representatives will include academic staff from the teaching and research areas of the university. These details will be used to ascertain the degree of participation of users in the process of IT governance. User level responses will also be used to assist in gauging the effectiveness of some aspects of the IT governance process.

Q1	Questions relating to the person interviewed: (a) What is your job title? (b) How long have you occupied this position? (c) What is your general background (ie management or IT technical) and experience? (d) What formal qualifications do you have?
Q2	Questions relating to the position of the person being interviewed: (a) What are the major responsibilities of your position? (b) To which position do you report / are responsible?

7.1 IT Governance Constructs and Mechanisms

The key objective of this section is to determine:

- The strategic IT governance mechanisms and constructs that are in place within the institution.
- Who participates in these mechanisms and constructs.
- How the mechanisms and constructs operate at the user level.

Q3	Questions relating to IT resources used in Academic and Research areas: (a) What applications do you use in the following areas of your work? (i) Administration? (ii) Teaching and learning/research activities? (iii) How are the applications nominated in (ii) above used by you? (b) Did you participate in selecting or requesting the software you nominated in part (a) above?
Q4	Questions relating to user involvement in the IT decision making process: (a) How are you involved in the decision making process for IT related issues in respect of your (academic/ research/ corporate administration) area of the University? (b) Have you been generally satisfied with the support for your area from the IT area at the strategic and operational levels? (c) How are you involved in the decision making process for general business related issues in respect of your (academic/ research/ corporate administration) area of the University? (d) Have you been generally satisfied with the support for your area from the University executive at the strategic and operational levels?

Q5	Questions relating to the alignment of IT services and initiatives with the needs of users: (a) What are the most challenging general issues the academic areas are currently facing? (b) What are the most challenging IT related issues the academic areas are currently facing? (c) In your view what are the most challenging general issues the academic areas will be facing in the long term? (d) In your view what are the most challenging IT related issues the academic areas will be facing in the long term?

QUALITATIVE DATA ANALYSIS & DISPLAYS

This section outlines the procedures that will be used to analyse the qualitative data collected in this research. Analytic comparison will be used to analyse the data arising from the multiple case studies undertaken in the research. If a variation in the outcomes, in terms of effective IT governance, is detected from the case studies then method of difference analysis will be pursued. In this event causal factors will be identified and related to the outcome, which will be the level of achievement in the key outcomes of IT governance. The conceptual groupings developed through coding will form the basis for identification and evaluation of the causal factors.

If no variation in effective IT governance outcomes is detected in the case studies then method of agreement analysis will be used to identify similar characteristics which are considered to have contributed to the common outcomes. In this event the conceptual groupings developed through coding will form the basis for identification and evaluation of the similar characteristics.

Ultimately the goal of the data analysis will be to build the data gathered into a coherent, plausible process based model of effective IT governance in universities. Neuman (2006) holds that qualitative data analysis facilitates the verification of a sequence of events or steps in a process, as is the basis of the model in this research.

8.1 Qualitative Analysis Protocol

The research questions and objectives of the research will be used to gather data to be analysed in accord with a qualitative analysis protocol that will evolve during the course of the study.

8.11 Interview Transcripts

All interviews conducted will be recorded and transcribed to text. Transcriptions of each interview will be return to the person interviewed for checking and verification of the accuracy of the answers provided in the interview. Feedback from the interviewee and the Case Study University will be incorporated in the final transcript.

8.12 Interview Summary Sheet

An interview summary sheet will be completed immediately following the interview and will contain a summary of the interview process, key points discussed, protocol issues identified and details of any reminders for follow up action.

8.13 Document Summary Form

A document summary form will itemise the documents collected from each Case Study University included in the case studies. Such documents may include annual reports, organisational charts, and business plans.

8.14 Respondent Question Summary Sheet

A respondent question summary sheet will be completed after the completion of each interview. This will contain a summary of the questions and answers discussed at each interview.

8.15 Research Codes

To assist in data analysis particular themes based on the conceptual research model will be assigned codes. The codes will be used in the process of data reduction and cross case analysis.

8.16 Transcript Mapping Summary Sheet

The transcript mapping summary is derived from the research questions identified and the conceptual research model developed through the literature and will give a brief description of the concepts and themes used in the data analysis.

8.17 Transcripts Summary & Structured Data Display

The transcript summary and structured data display is the basic method used to reduce the transcript data to a manageable form that will assist further theoretical analysis. The transcript uses short blocks of text or quotes which are selected based on the criteria or decision rules established in the transcript mapping summary sheet. The data displayed will highlight the patterns or themes within each case and across cases.

8.18 Case Study Report & Publication

A case study report will be compiled for each case study as it is completed. These will later form the basis of the final research document. With approval from the Case Study University concerned, some of the case studies may be further compiled into academic articles for publication at conferences and/or in journals. If the Case Study University involved is concerned with confidentiality then the case study research can be made anonymous so that the Case Study University cannot be identified.

Appendix A: Introduction Letter.
<DATE>

<NAME>
<POSITION>
<ADDRESS>

Dear <NAME>

Subject: <UNIVERSITY NAME> Participation in PhD Research Project

We are writing to you to formally request your university's participation in a research project that is being undertaken as part of the requirements for fulfilment of a Doctoral Degree by Michael Hicks.

The research gathers information about the governance of Information Technology in Australian universities. The information gathered in this research will be of significant importance to both the information technology profession and Australian universities.

Your participation in this research would involve formal interviews and where possible, the provision of archival data that would help clarify and explain issues discussed in the interviews. These interviews will be conducted with key individuals who were involved in the information technology governance process. Please find attached a brief summary that details the research questions that will be addressed and the initial conceptual model identified. Also attached is a copy of the research instrument that will be used in the interview.

The information that you provide will be held in the strictest of confidence and all normal safeguards to ensure confidentiality and protection of your university will be followed. If required, a statement or declaration of confidentiality would also be signed by the researcher and supervisor.

If you have any questions, please contact Michael Hicks on (08) 9266 2027 or email address: m.hicks@curtin.edu.au.

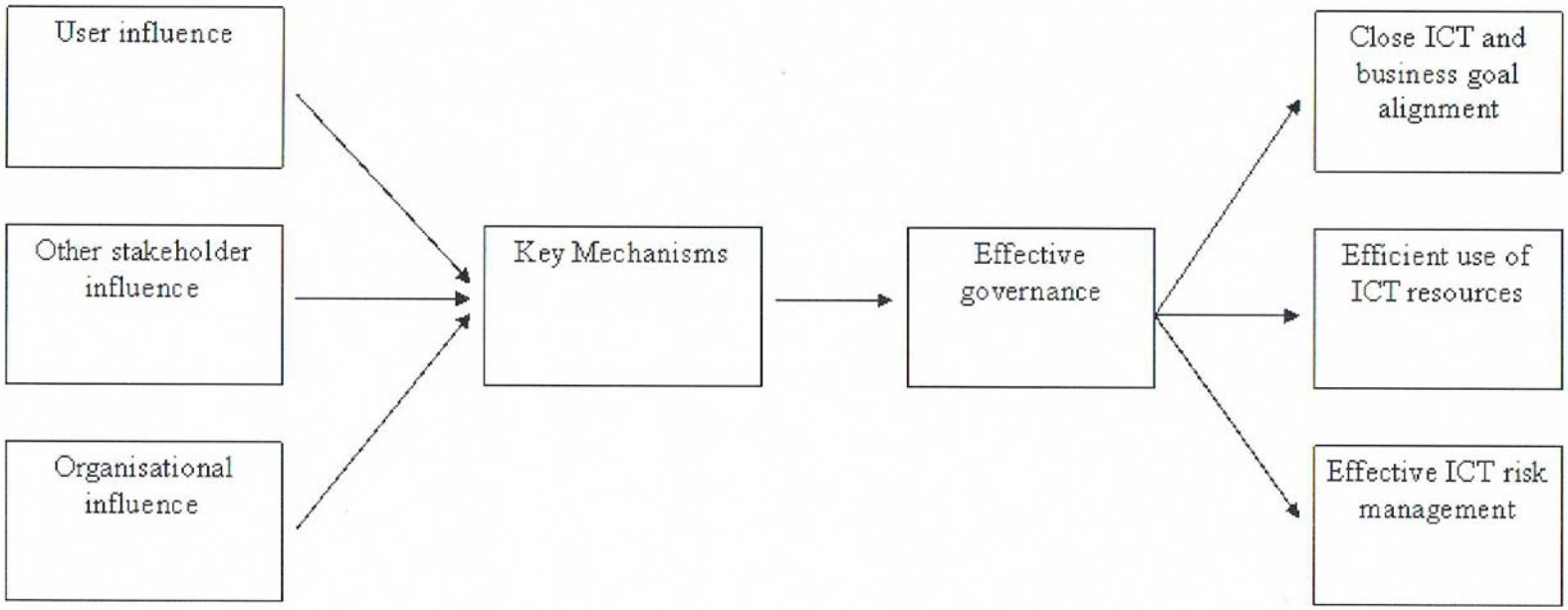
Your participation and support in this research project would be greatly appreciated and we look forward to meeting with you soon.

Yours faithfully

Michael Hicks
Doctoral Student
Curtin University of Technology

Professor Graham Pervan
Supervisor
Curtin University of Technology

Appendix B: Preliminary Study Model.



Appendix 3: Interview letter.

< date of letter>

Dear <name of interviewee>

Thank you for your agreement to participate in my PhD research. The study involves documenting and analysing the IT related decision making process in a number of case study universities. The major source of information gathering is through interviewing the key participants in the IT governance processes in each of the case study universities.

The attached case study protocol and research instrument outlines the methodology of the study**.**

All interviews and associated responses to all questions will be treated with the utmost confidentiality. Any data subsequently presented will be anonymous and will not allow the individual universities or interviewees involved in the study to be identified.

This study has been approved by the Curtin University Human Research Ethics Committee. If you have any queries regarding ethical issues involved in this study please contact the Secretary of Human Research Ethics Committee on (08) 9266 2784.

If you have any queries or comments concerning the methodology or other aspects of the research please contact Michael Hicks or Professor Graham Pervan.

Once again thank you for your assistance and participation in the study. I look forward to meeting with you on < date and time of interview> at <location of interview>.

Yours sincerely

Michael Hicks
PhD Researcher
School of Accounting
m.hicks@curtin.edu.au
(08) 9266 2027

Professor Graham Pervan
Supervisor
School of Information Systems
g.pervan@curtin.edu.au

Appendix 4: Survey letter.

< date of letter>

Dear <name>

I am undertaking PhD research on information technology governance decision making processes within Australian universities. This study includes the role of staff in the information technology decision process and their perception of the effectiveness of information technology governance at the strategic and operational levels.

The attached questionnaire is to establish your involvement in the information technology decision making process and your opinion of the effectiveness of those decisions. The survey is voluntary and intended for academic, research, and support staff. **No prerequisite knowledge of information technology is required as it is your opinion that is being sought.**

A copy of the questionnaire is enclosed and I would appreciate your cooperation in completing the questionnaire and returning it to me in the enclosed envelope **by <date>** or as soon after as possible. Responses to all questions will be treated with the utmost confidentiality. Completed questions will not have sufficient details on them to identify individual respondents and will only be viewed by myself. Any data subsequently presented will be aggregated and summarised. All respondents will be completely anonymous.

On completion of the questionnaire, which is anticipated will take approximately 20 minutes; please return it in the enclosed postage paid, self-addressed envelope. Your assistance in providing this information is greatly appreciated. If you have any queries or comments concerning this survey please contact Michael Hicks or Professor Graham Pervan.

This study has been approved by the Curtin University Human Research Ethics Committee. If you have any queries regarding ethical issues involved in this study please contact the Secretary of Human Research Ethics Committee on (08) 9266 2784.

Thank you very much for your kind attention and your assistance in completing the questionnaire.

Yours sincerely

Michael Hicks
PhD Candidate
School of Accounting
m.hicks@curtin.edu.au
(08) 9266 2027

Professor Graham Pervan
Supervisor
School of Information Systems
g.pervan@curtin.edu.au

Appendix 5: Survey questionnaire

SURVEY OF STAFF PERCEPTIONS OF INFORMATION TECHNOLOGY RESOURCES

General Instructions

1. You do not need to have a technical knowledge of Information Technology to complete this survey. There are no correct or incorrect answers to the items in the questionnaire as it is your opinion and experiences that are being sought.

2. If a particular question does not apply to your situation then please leave it blank.

3. Responses to all questions will be kept strictly confidential and anonymous. Completed questionnaires will only be seen by yourselves and the researchers. Any data subsequently presented will be aggregated.

4. Please return the completed questionnaire directly to the researcher using the postage paid, self-addressed envelope provided.

Your cooperation in completing and returning this questionnaire is greatly appreciated.

Michael Hicks
School of Accounting Curtin University
m.hicks@curtin.edu.au (08) 9266 2027

A	Details about you.
1.	Please indicate how long you have occupied your current position?
	Less than 2 years ☐ 2 to 5 years ☐ over 5 to 10 years ☐ over 10 years ☐
2.	What is your highest formal qualification?

3.	What is your age range in years?			
	Under 25	☐	25 to 34	☐
	35 to 45	☐	Over 45	☐

B	Details about your position.
1.	Please indicate the **major** responsibilities of your position?
	Teaching only ☐ Research only ☐ Teaching & research ☐ Administration ☐ Management ☐ Other ☐
2.	To what school or area do you belong?
	Accounting ☐ Information Systems ☐ Management/ Marketing ☐ Law ☐ Economics/ Finance ☐ Other ☐
3.	To which position do you report?
	PVC ☐ HOS ☐ Head of Department ☐ Other ☐

C **Your use of information technology resources by work category.**

Please indicate how often you use applications related to the general work categories shown below and how satisfied you are with the applications for the purpose you use them.

Work category	How often used					Your satisfaction level if used				
	Never	Rarely	Occasionally	Often	Always	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Administration										
• Employee kiosk	1	2	3	4	5	1	2	3	4	5
• Concur	1	2	3	4	5	1	2	3	4	5
• MS Office	1	2	3	4	5	1	2	3	4	5
• E-mail	1	2	3	4	5	1	2	3	4	5
Teaching										
• E-academic	1	2	3	4	5	1	2	3	4	5
• Blackboard	1	2	3	4	5	1	2	3	4	5
• E-mail	1	2	3	4	5	1	2	3	4	5
• Powerpoint	1	2	3	4	5	1	2	3	4	5
• Exam coversheet	1	2	3	4	5	1	2	3	4	5
• Internet	1	2	3	4	5	1	2	3	4	5
• MS Office	1	2	3	4	5	1	2	3	4	5
Research										
• Internet	1	2	3	4	5	1	2	3	4	5
• SPSS	1	2	3	4	5	1	2	3	4	5
• NVivo	1	2	3	4	5	1	2	3	4	5
• Endnote	1	2	3	4	5	1	2	3	4	5
Other (please specify)	1	2	3	4	5	1	2	3	4	5

D	How often you use a computer each day and the purpose of use.

What do you estimate is the average number of hours per day that you spend using a computer for each of the work related areas shown?

	Work Area	On-campus	At home	Other
1.	Teaching administration - includes recording marks & preparing sessional pays.			
2.	Teaching - includes preparation.			
3.	Research administration.			
4.	Research			
5.	Other administration			
6.	Other (work related) Please specify			

E	Sources of information for operational and strategic issues.

Please indicate by ticking the applicable boxes, how you are kept informed of operational and strategic issues related to general business and information technology decisions. Strategic are long term issues that affect the whole university. Operational are short term issues that effect your day to day work.

		Issue classification			
		Business issues		IT issues	
	I am kept informed of these issues through:	Operational issue	Strategic issue	Operational issues	Strategic issues
1.	Focus groups				
2.	Information sessions				
3.	Road shows				
4.	Email updates				
5.	Websites/ internet links				
6.	Newsletters				
7.	Other publications				
8.	Your membership in ongoing committees				
9.	Your membership in committees convened for a special purpose.				
10.	Word of mouth				
11.	Through a school representative on a committee. (Please specify below)				
12.	Other (Please specify below)				

F Your level of involvement in operational and strategic decision making.

Please indicate by ticking the applicable boxes, the level of your involvement in the following categories of issues related to information technology and general business initiatives of the university. Strategic information technology issues relate to university wide and long term IT matters. For example a strategic IT issue would include the design of the IT infrastructure. Operational information technology issues relate to your day to day use of IT resources, such as email policies and procedures.

Issue classification	Level of your involvement in decision making			
	None: *No participation.*	**Aware**: *I hear indirectly of progress of issues in this category.*	**Informed**: *A deliberate effort is made to keep me informed of progress of issues in this category.*	**Participative**: *My ideas are solicited, listened too, and considered in respect of issues in this category*
1 Operational Business issues				
2 Strategic Business issues				
3 Operational information Technology issues				
4 Strategic information technology issues				

G Your opinion and awareness of the decision making processes at the University.

Please indicate the extent to which you agree with each of the following statements.

	Does not apply to me	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
1. I am generally comfortable with using information technology.	0	1	2	3	4	5
2. I am very aware of **operational** information technology issues in the university.	0	1	2	3	4	5
3. I am very aware of **strategic** information technology issues in the university.	0	1	2	3	4	5
4. I am happy to try new computer programs that may assist in my **teaching** duties.	0	1	2	3	4	5
5. I am happy to try new computer programs that may assist in my **research** activities.	0	1	2	3	4	5
6. I am happy to try new computer programs that may assist in my **administrative** duties.	0	1	2	3	4	5
7. In my opinion information technology is important in my **teaching** activities.	0	1	2	3	4	5
8. In my opinion information technology is important in my **research** activities.	0	1	2	3	4	5
9. In my opinion information technology is important in my **administrative** duties.	0	1	2	3	4	5
10. I am generally satisfied with IT support for my area at the **strategic** levels.	0	1	2	3	4	5

G	Your opinion and awareness of the decision making processes at the University continued.						
		Does not apply to me	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
11.	I am satisfied with the computer hardware available for teaching purposes.	0	1	2	3	4	5
12.	My university uses a shared services model for information technology.	0	1	2	3	4	5
13.	I am satisfied with IT support for my area at the **operational** level.	0	1	2	3	4	5
14.	I am satisfied with the support for my area from the University executive at the **strategic** level (not IT related support).	0	1	2	3	4	5
15.	I am satisfied with the support for my area from the University executive at the **operational** levels (not IT related support).	0	1	2	3	4	5
16.	My satisfaction with IT support for **teaching** related applications has increased over the last 3 years.	0	1	2	3	4	5
17.	My satisfaction with IT support for **research** related applications has increased over the last 3 years.	0	1	2	3	4	5
18.	My satisfaction with IT support for **administration** related applications has increased over the last 3 years.	0	1	2	3	4	5
19.	The effectiveness of my **teaching** would be improved by additional financial resources for IT for teaching related applications.	0	1	2	3	4	5
20.	The effectiveness of **teaching** would be improved by additional IT training for teaching staff.	0	1	2	3	4	5
21.	The effectiveness of IT applications used in **teaching** would be improved by increased consultation with academic staff before acquiring teaching related applications.	0	1	2	3	4	5
22.	The effectiveness of **research** would be improved by additional financial resources for IT for research related applications.	0	1	2	3	4	5
23.	The effectiveness of **research** would be improved by additional IT training for staff .	0	1	2	3	4	5
24.	The effectiveness of IT applications used in **research** would be improved by increased consultation with staff users before acquiring research related applications.	0	1	2	3	4	5

H	What are the most important **IT related** issues the academic areas are facing in the short term and in the long term? Please rank each item from 1 (very important) to 3 (not important).							
	Issue	**Short term (within 1 year)**				**Long term (over 1 year)**		
		Very important	Important	Not important		Very important	Important	Not important
1	IT Security	1	2	3		1	2	3
2	Expanding IT use in teaching	1	2	3		1	2	3
3	Expanding IT use in research	1	2	3		1	2	3
4	Expanding IT use in administration	1	2	3		1	2	3
5	Adopting new technologies	1	2	3		1	2	3
6	Improving user support	1	2	3		1	2	3
7	Improving IT training	1	2	3		1	2	3
8	Improving availability of IT resources	1	2	3		1	2	3
9	Increasing user involvement in IT decisions	1	2	3		1	2	3
10.	Seeking user feedback on IT issues	1	2	3		1	2	3
11.	Acting on user feedback on IT issues	1	2	3		1	2	3
12.	Other (please specify)	1	2	3		1	2	3

I	What are the most important **general issues** the academic areas are facing in the short term and in the long term? Please rank each item from 1 (very important) to 3 (not important).							
	Issue	**Short term (within 1 year)**				**Long term (over 1 year)**		
		Very important	Important	Not important		Very important	Important	Not important
1	Campus security	1	2	3		1	2	3
2	Improving academic standards	1	2	3		1	2	3
3	Increasing research output	1	2	3		1	2	3
4	Reducing bureaucracy for day to day tasks	1	2	3		1	2	3
5	Competing with other universities in terms of academic standards	1	2	3		1	2	3
6	Competing with other universities in terms of research	1	2	3		1	2	3
7	Improving staff training and professional development	1	2	3		1	2	3
8	Improving availability of non-IT resources	1	2	3		1	2	3
9	Improving staff involvement in the general decision making process	1	2	3		1	2	3
10.	Seeking staff feedback	1	2	3		1	2	3
11.	Acting on staff feedback	1	2	3		1	2	3
12.	Increasing student numbers	1	2	3		1	2	3
13.	Other (please specify)	1	2	3		1	2	3

Are there any additional comments you would like to make in respect of IT governance in universities?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

End of the survey.

Thank you for your participation.

Please return the completed survey in the attached reply paid, self-addressed envelope or to:

Michael Hicks
School of Accounting
Curtin University
GPO Box U1987
Perth Western Australia 6845

Appendix 6: Additional survey data.

Time in position	Less than 2 yrs	2 to 5yrs	5 to 10 yrs	Over 10 years
Case Study 1	31%	31%	7%	31%
Case Study 2	44%	19%	13%	24%
Case Study 3	45%	24%	15%	16%
Case Study 4	33%	54%	0%	13%
Case Study 5	33%	10%	28%	29%
Case Study 6	37%	15%	22%	26%
Case Study 7	28%	41%	19%	12%
Case Study 8	35%	35%	11%	19%
Total	37%	28%	14%	21%
Highest Qualification	Less than Bachelors degree	Bachelors degree	Masters or higher degree	PhD
Case Study 1	3%	7%	31%	59%
Case Study 2	6%	10%	23%	60%
Case Study 3	12%	9%	24%	55%
Case Study 4	0%	9%	30%	61%
Case Study 5	24%	10%	33%	33%
Case Study 6	11%	22%	22%	44%
Case Study 7	10%	10%	24%	56%
Case Study 8	4%	8%	15%	73%
Total	8%	11%	25%	56%
Age	Less than 25 yrs	25 to 34 yrs	35 to 45 yrs	Over 45 yrs
Case Study 1	0%	14%	21%	66%
Case Study 2	2%	10%	31%	58%
Case Study 3	0%	3%	36%	61%
Case Study 4	0%	0%	21%	79%
Case Study 5	0%	9%	48%	43%
Case Study 6	0%	11%	33%	56%
Case Study 7	0%	3%	38%	59%
Case Study 8	8%	31%	19%	42%
Total	1%	10%	31%	58%

Survey Part A – Respondents personal details.

	Unitechs	New	Gum Tree	Sandstone	Overall
Time	2.3	2.0	2.4	2.2	2.2
Qualification	3.4	3.4	2.9	3.4	3.3
Age	3.5	3.7	3.4	3.3	3.5

Average personal details of respondents by university type.

Source	Type of information	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	Total	% Resp.
Focus groups	Operational Business issues	0	6	0	0	0	3	6	2	17	7%
Focus groups	Strategic Business issues	2	6	0	2	2	2	4	2	20	8%
Focus groups	Operational IT issues	0	3	0	0	0	0	3	2	8	3%
Focus groups	Strategic IT issues	0	1	0	0	2	2	4	3	12	5%
Info sessions	Operational Business issues	9	21	9	8	9	11	16	10	93	38%
Info sessions	Strategic Business issues	10	23	9	8	4	15	19	10	98	40%
Info sessions	Operational IT issues	4	16	7	8	5	7	12	5	66	27%
Info sessions	Strategic IT issues	4	9	3	5	0	5	13	0	41	17%
Road shows	Operational Business issues	3	7	3	0	0	0	6	2	21	9%
Road shows	Strategic Business issues	1	13	4	2	1	1	9	1	32	13%
Road shows	Operational IT issues	3	2	2	0	1	1	5	1	15	6%
Road shows	Strategic IT issues	1	0	3	0	1	2	2	1	10	4%
Email update	Operational Business issues	27	48	24	17	17	24	28	22	207	84%
Email update	Strategic Business issues	19	36	18	17	12	17	25	19	163	67%
Email update	Operational IT issues	23	41	27	21	14	15	28	24	203	83%
Email update	Strategic IT issues	15	33	16	17	5	7	19	18	134	55%
Website	Operational Business issues	14	26	14	9	6	14	19	14	116	47%
Website	Strategic Business issues	14	21	10	10	4	14	16	14	103	42%
Website	Operational IT issues	14	24	14	11	3	14	21	11	112	46%
Website	Strategic IT issues	13	17	8	7	4	5	17	7	81	33%
Newsletters	Operational Business issues	13	12	14	4	8	8	20	16	95	39%
Newsletters	Strategic Business issues	11	11	14	6	5	6	14	14	81	33%
Newsletters	Operational IT issues	7	9	6	4	0	4	12	7	50	20%
Newsletters	Strategic IT issues	7	6	5	2	1	3	7	3	35	14%
Other publications	Operational Business issues	2	7	1	0	3	4	4	4	25	10%
Other publications	Strategic Business issues	2	4	1	1	2	2	2	3	17	7%
Other publications	Operational IT issues	0	2	1	1	0	2	4	2	12	5%
Other publications	Strategic IT issues	0	2	1	1	1	0	2	0	7	3%
Com. member	Operational Business issues	6	22	12	4	5	6	9	7	71	29%
Com. member	Strategic Business issues	4	19	6	6	7	1	11	9	63	26%
Com. member	Operational IT issues	2	4	5	2	1	2	7	0	24	10%
Com. member	Strategic IT issues	3	3	2	4	2	1	8	4	27	11%
Mem. special com.	Operational Business issues	5	11	3	3	5	4	8	7	46	19%
Mem. special com.	Strategic Business issues	4	10	3	4	8	1	10	8	48	20%
Mem. special com.	Operational IT issues	1	3	0	1	2	1	6	3	17	7%
Mem. special com.	Strategic IT issues	2	4	1	1	2	1	7	3	21	9%
Word of mouth	Operational Business issues	13	25	15	10	11	14	17	11	116	47%
Word of mouth	Strategic Business issues	11	22	7	13	5	11	14	11	94	38%
Word of mouth	Operational IT issues	12	18	8	13	9	14	15	13	102	42%
Word of mouth	Strategic IT issues	8	14	4	12	3	10	13	8	72	29%
Com. Representative	Operational Business issues	7	21	7	0	1	5	4	9	54	22%
Com. Representative	Strategic Business issues	5	15	7	1	1	4	3	9	45	18%
Com. Representative	Operational IT issues	2	8	3	3	0	2	4	3	25	10%
Com. Representative	Strategic IT issues	1	5	1	3	1	2	2	2	18	7%
	Total	304	610	298	241	173	267	475	324	2717	

Sources of information for operational and strategic issues.

General issue	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	Average
Campus security	1.82	1.49	1.68	1.48	2.00	2.00	1.71	1.73	1.74
Improving academic standards	1.24	1.45	1.34	1.39	1.28	1.46	1.38	1.76	1.41
Increasing research output	1.28	1.61	1.55	1.57	1.41	1.45	1.41	1.48	1.47
Reducing bureaucracy	1.17	1.41	1.50	1.43	1.56	1.48	1.53	1.46	1.44
Competing on academic standards	1.69	1.74	1.91	2.05	1.76	1.91	1.66	1.69	1.80
Competing with research	1.59	1.58	1.90	1.87	1.71	1.78	1.56	1.62	1.70
Improving staff training	1.61	1.74	1.72	1.65	1.67	1.91	1.78	1.81	1.74
Non-IT resources	1.83	1.78	1.90	1.86	1.72	1.92	1.91	2.04	1.87
Staff involvement in decisions	1.90	1.86	1.66	1.83	1.71	1.88	2.06	2.00	1.86
Staff feedback	1.79	1.78	1.63	1.70	1.71	1.67	1.66	1.96	1.74
Acting on staff feedback	1.66	1.50	1.25	1.39	1.61	1.40	1.63	1.77	1.53
Increasing student numbers	2.38	2.02	1.94	1.65	2.06	2.08	2.44	2.42	2.12
Other	1.50	1.86	2.25	1.33	1.00	1.75	1.50	1.00	1.52
Average	1.65	1.68	1.71	1.63	1.63	1.75	1.71	1.75	1.69

Note: The lower the average the more important the issue is perceived.

Summary of importance of short term general issues.

General issue	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	Average
Campus security	1.64	1.51	1.72	1.43	1.94	1.78	1.67	1.62	1.64
Improving academic standards	1.17	1.34	1.38	1.35	1.22	1.28	1.25	1.36	1.30
Increasing research output	1.17	1.46	1.52	1.57	1.29	1.13	1.22	1.24	1.34
Reducing bureaucracy	1.14	1.40	1.50	1.39	1.44	1.40	1.45	1.27	1.38
Competing on academic standards	1.66	1.60	1.97	1.91	1.65	1.63	1.47	1.54	1.67
Competing with research	1.52	1.53	1.87	1.87	1.59	1.46	1.44	1.35	1.57
Improving staff training	1.54	1.61	1.56	1.65	1.50	1.88	1.72	1.54	1.63
Non-IT resources	1.79	1.75	1.74	1.55	1.67	1.79	1.78	1.96	1.76
Staff involvement in decisions	1.86	1.84	1.53	1.57	1.65	1.67	2.03	1.77	1.76
Staff feedback	1.76	1.76	1.56	1.43	1.65	1.63	1.69	1.81	1.67
Acting on staff feedback	1.62	1.49	1.25	1.35	1.56	1.32	1.56	1.62	1.47
Increasing student numbers	2.31	1.94	1.72	1.61	1.88	1.87	2.38	2.27	2.01
Other	1.67	1.63	2.00					2.00	1.75
Average	1.60	1.60	1.64	1.56	1.59	1.57	1.64	1.64	1.61

Note: The lower the average the more important the issue is perceived.
Categories with nil response are excluded from the calculation of the average.

Summary of importance of long term general issues.

Appendix 7: Research coding scheme.

Research themes and construct coding

Theme	Construct	Construct Description	Code	Interview Question	Survey Question	Research Question
Key mechanisms			MEC			
Planning	Alignment mechanisms	Mechanisms to achieve business & IT goal alignment	MECALIGN	CIO Q8 - Q10, VP Q4 & Q5		RQ2 & RQ10
	User participation	Mechanisms to involve users in IT decision making	MECPART	CIO Q4, Q11 & Q12		RQ2, RQ10 & RQ11
	Steering committee	Presence of an active IT Steering or Advisory committee	MECSTEER	CIO Q3, VP Q8		RQ2, RQ10, RQ11 & RQ12
	Support	Evidence of high level executive support for strategic IT	MECSUP	CIO Q7, VP Q9		RQ2, RQ10, RQ11 & RQ12
	Monitoring	IT strategic progress monitored by executive	MECMON	CIO Q15, VP Q9		RQ2, RQ10, RQ11 & RQ12
	Strategic plan	There is a current IT strategic plan	MECPLAN	CIO Q9		RQ2, RQ10, RQ11 & RQ12
	Cycles match	The business & IT strategic planning cycles correspond	MECCYC	CIO Q9		RQ2 & RQ10
Faculty relationship	Service levels	Comprehensive performance metrics for IT service levels	MECSERV	CIO Q15		RQ2 & RQ10
	Relationship	Mechanisms to promote user relationships	MECREL	CIO Q4, Q11 & Q12		RQ2 & RQ10
	Transparency	Transparency of IT governance decisions & processess	MECTRAN	CIO Q4, Q11 & Q12		RQ2 & RQ10

IT Management	CIO	CIO or equivalent positon	MECCIO	CIO Q1 & Q2		RQ2 & RQ10
	Clear roles	Clear roles for IT central & decentralised areas	MECROLE	CIO Q3		RQ2 & RQ10
	Case	Business cases or other support for IT initiatives	MECCASE	CIO Q13		RQ2, RQ10 & RQ11
	Risk management	Mechanisms to better manage IT risk	MECRISK	CIO Q14		RQ2 & RQ12
	Resource use	Mechanisms to achieve the efficient use of IT resources	MECRES	CIO Q3		RQ2 & RQ11
	Project management	Standard project management methodology used for IT projects	MECPROJ	CIO Q13		RQ2 & RQ12
Organisational influence			ORG			
	Centralisation	The degree of centralisation of IT decision making	ORGCENT	ORG Q1, CIO Q2		RQ6 & RQ7
	Centralisation reasons	The reasons given for the degree of centralisation of IT decision making	ORGWHY	CIO Q2		RQ6 & RQ7
	Classification	The effect of whether the university is a Unitech, New, Gum Tree, or Sandstone	ORGCLASS	ORG Q2		RQ7
	Resource availability	The effect of the resources available	ORGRES	ORG Q2		RQ7
	Cost reduction	Emphasis placed on reducing IT costs	ORGCOST	CIO Q6		RQ7
	Research orientation	The emphasis placed by the university on research	ORGRSH	ORG Q2		RQ7
	Size	The effect of student numbers on IT governance	ORGSIZE	ORG Q2		RQ7
User influence			USE			

User Profile	Personal	User demographics	USEPRO		Part A Q1 - Q3	RQ3 & RQ4
	Position	Duties of user	USEDUTY		Part B Q1 - Q3	RQ3 & RQ4
	IT use	Areas of major IT use	USEIT		Part C	RQ3 & RQ4
	Computer use	How often & location of computer use	USECOMP		Part D	RQ3 & RQ4
Information sources	Operational business	The significant sources of operational business information	USEBUSOP		Part E item 1 - 12	RQ3
	Strategic business	The significant sources of strategic business information	USEBUSST		Part E item 1 - 12	RQ3
	Operational IT	The significant sources of operational IT information	USEITOP	CIO Q4	Part E item 1 - 12	RQ3
	Strategic IT	The significant sources of strategic IT information	USEITST	CIO Q4	Part E item 1 - 12	RQ3
Participation	Operational business	The degree of user participation in operational business decisions	USEPTBUSOP		Part F item 1 - 4	RQ3
	Strategic business	The degree of user participation in strategic business decisions	USEPTBUSST		Part F item 1 - 4	RQ3
	Operational IT	The degree of user participation in operational IT decisions	USEPTITOP	CIO Q4	Part F item 1 - 4	RQ3
	Strategic IT	The degree of user participation in strategic IT decisions	USEPTITST	CIO Q4	Part F item 1 - 4	RQ3
Relationship	Awareness	The users awareness of IT operations & decisions	USEAWARE	CIO Q4	Part G Q2 - Q3 & Q12	RQ3 & RQ4
	Opinion	The users opinion of IT operations & decisions	USEOPIN	CIO Q11	Part G Q10, Q11, Q13 - Q26	RQ3 & RQ4

	Attitude	The users attitude to IT importance & use	USEATT	CIO Q11 & Q12	Part G Q1, Q4 - Q9	RQ3 & RQ4
User IT issues	Short term	IT issues by importance in the short term	USEITISSH		Part H	RQ3 & RQ4
	Long term	IT issues by importance in the long term	USEITISSL		Part H	RQ3 & RQ4
User Business issues	Short term	Business issues by importance in the short term	USEBUSISH		Part I	RQ3 & RQ4
	Long term	Business issues by importance in the long term	USEBUSISL		Part I	RQ3 & RQ4
Other Stakeholder influence			STA			RQ5
	Stakeholder ID	Stakeholders identified as influencing the university	STAID	ORG Q3, VPQ7		RQ5
	Audit	Influence of audit requirements & activities	STAAUD	ORG Q3, VPQ7		RQ5
	Government	Influence of Government requirements & activities	STAGOV	ORG Q3, VPQ7		RQ5
	Community	Influence of the community	STACOM	ORG Q3, VPQ7		RQ5
	Internal	Influence of internal stakeholders	STAINT	ORG Q3, VPQ7		RQ5
	Other	Influence of other stakeholders	STAOTHER	ORG Q3, VPQ7		RQ5
	Stakeholder areas	The IT areas influenced by non-user stakeholders	STAINFLU	ORG Q3, VPQ7		RQ5

Effective IT governance						
Issues pre-review		IT issues reported prior to strategic IT review	PRE			
Planning	Business case	Business case or other evaluation not required for IT projects	PRECASE	CIO Q3 & Q13		RQ8 & RQ9
	Planning cycle	The IT & business planning cycles do not match	PRECYCLE	CIO Q3 & Q9		RQ8 & RQ9
	Bus plan vague	The strategic business plan is vague	PREVAGUE	CIO Q3 & Q9		RQ8 & RQ9
	Intangibles	Intagible benefits & costs are not considered for evaluating IT initiatives	PREINTAN	CIO Q3 & Q13		RQ8 & RQ9
	No IT plan	No current strategic IT plan	PREPLAN	CIO Q3 & Q9		RQ8 & RQ9
	No steering committee	No active IT steering committee or Advisory committee	PRESTEER	CIO Q3		RQ8 & RQ9
	Technology lacking	Perception that lagging behind other universities	PRELAG	CIO Q3 & Q7		RQ8 & RQ9
	Culture	Culture that IT is not strategic	PRECULT	CIO Q3 & Q7		RQ8 & RQ9
Faculty behaviour	Duplication	Duplication of IT resources	PREDUP	CIO Q3 & Q7		RQ8 & RQ9
	Expenditure identifiable	IT expenditure cannot be identified	PREEXP	CIO Q3 & Q7		RQ8 & RQ9
	Transparency faculty	Transparency of faculty level IT decisions	PRETRANFAC	CIO Q3 & Q7		RQ8 & RQ9
	Transparency central	Transparency of central IT decisions	PRETRANCEN	CIO Q3 & Q7		RQ8 & RQ9
	Fragmentation	Fragmentation of IT occurring	PREFRAG	CIO Q3 & Q7		RQ8 & RQ9

	Expectations	Unrealistic user expectations	PREEXPECT	CIO Q3 & Q12		RQ8 & RQ9
IT Management	Budget	IT budget process does not reflect reality of IT expenditure	PREBUD	CIO Q3 & Q6		RQ8 & RQ9
	Risk management	IT risk management incomplete	PRERISK	CIO Q3 & Q14		RQ8 & RQ9
	Accountability	Lack of accountability for IT decisions	PREACC	CIO Q3 & Q7		RQ8 & RQ9
	Project management	No standard project management methodology for IT initiatives	PREPROJ	CIO Q3 & Q13		RQ8 & RQ9
	Funding	Serious funding deficiencies for IT activities	PREFUND	CIO Q3, Q7 & Q6		RQ8 & RQ9
	Data integrity	Lack of integrity across different data bases	PREDATA	CIO Q3 & Q7		RQ8 & RQ9
Issues post-review		Issues reported after strategic IT review implementation	POS			
Planning	Business case	Business case or other evaluation not required for IT projects	POSCASE	CIO Q3 & Q13		RQ8 & RQ9
	Planning cycle	The IT & business planning cycles do not match	POSCYCLE	CIO Q3 & Q9		RQ8 & RQ9
	Bus plan vague	The strategic business plan is vague	POSVAGUE	CIO Q3 & Q9		RQ8 & RQ9
	Intangibles	Intagible benefits & costs are not considered for evaluating IT initiatives	POSINTAN	CIO Q3 & Q13		RQ8 & RQ9
	No IT plan	No current strategic IT plan	POSPLAN	CIO Q3 & Q9		RQ8 & RQ9
	No steering committee	No active IT steering committee or Advisory committee	POSSTEER	CIO Q3		RQ8 & RQ9
	Technology lacking	Perception that lagging behind other universities	POSLAG	CIO Q3 & Q7		RQ8 & RQ9

	Culture	Culture that IT is not strategic	POSCULT	CIO Q3 & Q7		RQ8 & RQ9
Faculty behaviour	Duplication	Duplication of IT resources	POSDUP	CIO Q3 & Q7		RQ8 & RQ9
	Expenditure identifiable	IT expenditure cannot be identified	POSEXP	CIO Q3 & Q7		RQ8 & RQ9
	Transparency faculty	Transparency of faculty level IT decisions	POSTRANFAC	CIO Q3 & Q7		RQ8 & RQ9
	Transparency central	Transparency of central IT decisions	POSTRANCEN	CIO Q3 & Q7		RQ8 & RQ9
	Fragmentation	Fragmentation of IT occurring	POSFRAG	CIO Q3 & Q7		RQ8 & RQ9
	Expectations	Unrealistic user expectations	POSEXPECT	CIO Q3 & Q12		RQ8 & RQ9
IT Management	Budget	IT budget process does not reflect reality of IT expenditure	POSBUD	CIO Q3 & Q6		RQ8 & RQ9
	Risk management	IT risk management incomplete	POSRISK	CIO Q3 & Q14		RQ8 & RQ9
	Accountability	Lack of accountability for IT decisions	POSACC	CIO Q3 & Q7		RQ8 & RQ9
	Project management	No standard project management methodology for IT initiatives	POSPROJ	CIO Q3 & Q13		RQ8 & RQ9
	Funding	Serious funding deficiencies for IT activities	POSFUND	CIO Q3, Q7 & Q6		RQ8 & RQ9
	Data integrity	Lack of integrity across different data bases	POSDATA	CIO Q3 & Q7		RQ8 & RQ9

Appendix 8: The schedule of site visits showing the source and nature of background information.

Case Study	Date	Activity	Sources of general background information	Time of interview	Length of interview	Purpose
CS1	15/10/2009	Web site search	Information Technology Technology Advisory Group meeting schedule 2009, IT governance - IT committees terms of reference & membership, Web Steering Committee - committee operations, Vision assumptions & principles for web development, Web Steering Committee terms of reference & membership, IT Planning Reference Group membership & terms of reference, IT Strategy Committee membership & terms of reference			Case study background & interview preparation
CS1	15/10/2009	Web site search	ITS organisational details & structure, University history & profile, Quality Assurance Services Organisation chart			Case study background
CS1	15/10/2009	Web site search	Business school staff directory, Academic calendar			Survey distribution
CS1	15/10/2009	Web site search	Individual staff profiles			Interview preparation
CS1	15/10/2009	Web site search	Annual Report 2007, Governance & Management profile & description, IT Plan to 2010, IT Plan to 2010 midpoint update, Strategic Plan to 2010, Strategic Plan to 2010 update, Annual Report 2008, Annual Report 2008 Vice Chancellors statement & summary, ITS Statistics 2009 (monthly compilation)			Case background
CS1	16/10/2009	Web site search	Research Technology Advisory Group terms of reference & membership, Research Technology Advisory Group schedule of meetings for 2009, University organisational chart, University vision & mission			Case study background & interview preparation

CS1	16/10/2009	Web site search	Developing the Academic Plan History & Background, Academic Plan 2006-2010, Learning & Teaching Strategy 2007-2010, University support for e-Research in the State - Recommendations, National & State trends in research funding & e-research, Research leadership, History of research support, Strategic E-research support in the state universities			Case background
CS1	14/11/2009	Web site search	e-Research Office profile & purpose statement			Case study background & interview preparation
CS1	19/11/2009	Interview E-research Deputy Director	Notated IT strategic decision making model	10am	45 mins	
CS1	19/11/2009	Interview Deputy Director Quality Assurance ITS		11am	45 mins	
CS1	19/11/2009	Interview Deputy Director Application Services	Notated IT strategic decision making model	9am	30 mins	
CS1	23/11/2009	Interview Director Learning & Teaching Development		11am	30 mins	
CS1	23/11/2009	Interview Executive Director ITS	Notated IT strategic decision making model	12pm	60 mins	
CS1	23/11/2009	Interview Vice President Resources		4:30pm	30 mins	
CS1	23/11/2009	Site visit	Pocket statistics 2008, Code of conduct,			
CS2	19/09/2006	Web site search	Overview of Information Technology Services			Case study background & interview preparation
CS2	29/10/2007	Web site search	Annual report 2006, Enterprise content management project description (FLOW), FLOW newsletter issue No 1 2007			Case study background

CS2	06/02/2008	Web site search	IT Strategy & Planning Committee constitution, IT Strategy & Planning Committee agenda 13 February 2008, IT Strategy & Planning Committee IT Enabling plan review November 2007, IT Strategy & Planning Committee status report on IT enabling plan for 2007, IT Strategy & Planning Committee minutes of meetings March, May, July, August, & October 2007			Case study background
CS2	06/02/2008	Web site search	Planning & Management Committee membership as at 1 October 2007, Planning & Management Committee constitution, Planning & Management Committee minutes of meetings for September, October & November 2007			Case study background
CS2	07/02/2008	Web site search	Roles of officers in respect to risk management, Web server infrastructure requirements procedures, Risk management policy statement October 2009, Office of the Vice Chancellor profile			Case study background
CS2	07/02/2008	Web site search	Priorities 2007/8 University operational plan, Strategic & corporate services profile, About Information Services, ITS Infrastructure profile, IT Strategy & Planning Committee membership & terms of reference, ITS organisational chart			Case study background & interview preparation
CS2	07/02/2008	Web site search	University Governance structure for 2006, Names & responsibilities of senior officers as at August 2007, University Committees 2008 meeting dates			Case study background & interview preparation
CS2	07/02/2008	Web site search	Council membership as at June 2007, University Council minutes of meeting September, October & November 2007			Case study background

CS2	11/02/2008	Web site search	Presentation introducing IT shared services model, Message from the CIO			Case study background
CS2	11/02/2008	Web site search	University organisational & responsibilities of senior officers chart, University Committee organisation chart July 2006, Administrative Structure chart, Revised CITS profile as at January 2008			Case study background & interview preparation
CS2	12/02/2008	Web site search	IT Strategy & Planning Committee - status report on development of an IT governance framework for the University 2007			Case study background
CS2	12/02/2008	Web site search	Planning & Management Committee 26 February 2008 - IT enabling plan report & review			Case study background
CS2	12/02/2008	Web site search	Information Management Services Operational Plan 2007			Case study background
CS2	26/02/2008	Site visit	Strategic plan 2009-2013, Pocket statistics 2006			Case study background
CS2	04/03/2008	Interview CIO	Notated IT Strategy & Planning Committee membership list, Notated ITS organisational chart, Notated University organisational & responsibilities of senior officers chart	11am	90 mins	
CS2	11/03/2008	Interview Deputy Vice Chancellor Academic Services		8:30am	45 mins	
CS2	12/03/2008	Interview Pro Vice Chancellor Business School		4pm	45 mins	
CS2	15/03/2008	Site visit	Internal Audit Report on IT Governance September - December 2004 (Through CIO)			Case study background
CS2	19/03/2008	Dean of Research School of Humanities		11am	30 mins	
CS2	26/03/2008	Web site search	eValuate Services for Staff - Research findings November 2007, Functions Used & Usage of IT November 2007			Case study background

CS2	27/03/2008	Interview Director Research & Development		11:30am	60 mins	
CS2	27/03/2008	Interview Associate Director Research & Development		11:30am	60 mins	
CS2	27/03/2008	Web site search	Organisational profile, University history			Case study background
CS2	04/04/2008	Interview Professor Head of Department Electrical & Computer Engineering		11am	30 mins	
CS2	04/04/2008	Interview Director of Finance & Operations		2pm	30 mins	
CS2	26/02/2009	Web site search	Staff directory business school			Survey distribution
CS2	02/03/2009	Interview Research Assistant Business School		10am	40 mins	Survey clarification & validation
CS2	02/03/2009	Interview Lecturer Business School		11am	40 mins	Survey clarification & validation
CS2	03/03/2009	Interview Associate Professor Business School		10am	40 mins	Survey clarification & validation
CS2	03/03/2009	Interview Lecturer School of Humanities		2pm	40 mins	Survey clarification & validation
CS2	03/03/2009	Interview Lecturer Business School		9am	40 mins	Survey clarification & validation
CS2	04/03/2009	Interview Business Manager Business School		9am	40 mins	Survey clarification & validation
CS2	05/03/2009	Interview Senior Lecturer Business School		11am	40 mins	Survey clarification & validation
CS2	05/03/2009	Interview Lecturer Business School		1pm	40 mins	Survey clarification & validation
CS2	05/03/2009	Interview Senior Lecturer Business School		3pm	40 mins	Survey clarification & validation
CS3	11/02/2009	Web site search	ITS staff directory			Interview preparation

CS3	19/02/2009	Web site search	University committees organisation chart, IT Service Centre structure chart, Office of Research & Innovation organisation chart			Case study background & interview preparation
CS3	19/02/2009	Web site search	Strategic Information Management Steering Committee membership & terms of reference			Case study background
CS3	20/02/2009	Interview CIO	IT governance framework chart, updated university committees organisation chart, Notated IT Services structure chart	8:50am	90 mins	
CS3	22/04/2009	Web site search	Faculty of Business & Law organisation chart, Faculty of Business & Law staff demographics			Survey distribution & interview preparation
CS3	23/04/2009	Web site search	Faculty of Business & Law staff directory			Survey distribution
CS3	28/07/2009	Web site search	Information Technology Infrastructure description & organisation,			
CS3	13/08/2009	Interview Manager IT Support Services		1:30pm	45 mins	
CS3	13/08/2009	Interview CIO (follow up interview)		9am	60 mins	

CS3	14/08/2009	Web site search	Organisation chart Knowledge & Information Technology Service Centre, IT services description & service directory, KITSC monthy management meetings schedule & membership, Library Consultative Committee membership & terms of reference, KITSC committees listing & main purpose description, IT Project Highlight report for August 2008, Flexilearn Steering Committee terms of reference, Flexilearn Steering Committee minutes of meeting June 2006, Learning & Services Centre Annual Review 2006, Communications & Information Technology Plan 2000-2003, Standard operating environment policy, Website Management Committee members & terms of reference, Website Management Committee current projects progress report, ITS Business units list & purpose, IT Management Liaison list & description, IT newsletter edition July 2008, KITSC services catalogue,			Case study background & interview preparation
CS3	14/08/2009	Web site search	General information & history of university, List of faculties & schools, Council members & terms of reference, Matters to be reserved to Council, Vice Chancellors Faculty Advisory Forum membership & terms of reference, Delegations & management of risk, University code of conduct, Vice Chacellor & executive team directory, University meeting planner & schedule 2007, University meeting planner & schedule 2008, Performance Portfolio for AUQA Audit report, Univeristy structure chart, University statistics 2007			Case study background & interview preparation

CS3	24/08/2009	Interview Director Research Faculty Science & Engineering		9am	30 mins	
CS3	26/08/2009	Interview Chief Financial Officer/ Vice President Resources		10am	45 mins	
CS3	27/08/2009	Interview Academic School of Computer Science		11am	30 mins	
CS4	07/08/2009	Web site search	University organisational chart,			Case study background
CS4	01/09/2009	Web site search	IT area description & structure details, University Council standing orders, Univeristy Council membership & terms of reference, University Governance model			Case study background
CS4	09/09/2009	Web site search	Biography & executive profile for COO			Interview preparation
CS4	14/09/2009	Web site search	Staff profiles for interviewees			Interview preparation
CS4	14/09/2009	Web site search	IT support catalogue, University Annual Report 2008, Diagram of external interaction, University strategic plan 2008-2012, Consultant report on the Development of an enterprise architecture for the University			Case study background
CS4	18/09/2009	Web site search	University staff details			Interview preparation
CS4	22/09/2009	Web site search	Committees & Advisory groups membership & terms of reference			Case study background
CS4	22/09/2009	Web site search	Information Technology Advisory Group membership & terms of reference, Governance & committee structure chart, Management structure chart, Finance Committee membership & terms of reference, Vice Chancellors Group membership & terms of reference, Audit & Risk Management Committee membership & terms of reference, Committees of Council listing & description			Case study background & interview preparation

CS4	28/09/2009	Web site search	Teaching & Learning Centre Mission Statement			Interview preparation
CS4	28/09/2009	Web site search	Technical Resources Group membership & terms of reference, Information Technology Advisory Group membership & terms of reference			Case study background
CS4	28/09/2009	Web site search	Teaching & Learning program & project status report, ITS weekly report for the week ending 15 December 2008, IT project prioritisation, resource & funding initiative report February 2008, IT project size guidelines, IT change/project management process, IT project board roles & responsibilities, Change & Project Advisory Board membership & terms of reference, Strategic Plan 2008-2012			Case study background
CS4	06/10/2009	Interview COO	Updated IT strategic decision making diagram	10am	75 mins	
CS4	06/10/2009	Interview Director of Information Management		11am	45 mins	
CS4	06/10/2009	Interview Senior Manager Outsourcing		12:15pm	45 mins	
CS4	06/10/2009	Associate Dean Education Business & Government		1pm	30 mins	
CS4	06/10/2009	Manager Human Resource Management Systems		2pm	30 mins	
CS4	06/10/2009	Manager Research Office		3pm	30 mins	
CS4	06/10/2009	Interview Director Teaching & Learning Centre		9am	30 mins	
CS4	11/10/2009	Web site search	Academic calendar, University key contacts, Faculty of business & government staff directory			Survey distribution
CS4	12/10/2009	Web site search	Faculty Statistics			Case study background

CS5	06/08/2009	Web site search	ITS staff directory, Office of Information Technology Services Strategic Plan 2009-2011, ITS Current Operating Plan, IT Strategic Plan 2004-2007			Case study background & interview preparation
CS5	17/08/2009	Web site search	Office of IT services organisation details & description, Office of IT services mission & vision statement, Office of IT services planning, IT services operational plan for 2008/9, Division of Corporate Services organisational chart, Division of Corporate Services 2009 IT services catalogue			Case study background & interview preparation
CS5	17/08/2009	Web site search	University organisational structure & governance, Executive organisational structure, University committee structure, Universtiy 2008 annual report, University committees membership & terms of reference			Case study background
CS5	24/08/2009	Interview Teaching & Learning staff		1:30pm	30 mins	
CS5	24/08/2009	Interview CIO & Director ITS	Organisation of IT, Current IT Strategies, IT Planning process, 2008/9 Planning.	3pm	90 mins	
CS5	25/08/2009	Interview Manager Strategic Projects & Policy		11am	40 mins	
CS5	03/09/2009	Web site search	Staff directory Research & Development			Interview preparation
CS5	14/09/2009	Web site search	Academic calendar, Business School staff directory,			Survey distribution
CS6	03/06/2009	Web site search	University campus locations, Information Services Division structure & staffing, IS Department committees membership & terms of reference			Case study background & interview preparation

CS6	25/06/2009	Web site search	Administrative Structure chart, Central Committee Structure chart, Office of Research role & staffing			Case study background & interview preparation
CS6	01/07/2009	Web site search	Information Services Committees, Information Services Structures & Departments,			
CS6	01/07/2009	Web site search	University Enterprise Systems description, About us - ITS Division, University Council membership & terms of reference, Administrative divisions & units - structural listing, Officers of the University Executive, Regional & interstate locations, University Annual Report 2008			Case study background & interview preparation
CS6	13/07/2009	Interview Dean of School of Business		10:30am	50 mins	
CS6	13/07/2009	Interview Executive Director of Administration		11:30am	45 mins	
CS6	13/07/2009	Interview Assoc. Dean Research		1pm	30 mins	
CS6	14/07/2009	Interview Manager Infrastructure Services		1:30pm	50 mins	
CS6	14/07/2009	Interview Manager Research Office		10am	30 mins	
CS6	14/07/2009	Interview Director of Information Services		11:30am	60 mins	
CS6	14/07/2009	Interview Manager Business Applications		2:30pm	45 mins	
CS6	23/07/2009	Web site search	Academic calendar, List of business school staff, List of school of humanities staff,			Survey distribution timing,survey distribution
CS7	01/06/2009	Web site search	Academic calendar			Arrange interviews, timing of survey distribution

CS7	01/06/2009	Web site search	Central ITS structure chart, Shared services review summary and current background, Review of services, Shared Services Consultation Matrix			Interview background
CS7	01/06/2009	Web site search	University Planning Pyramid, Senior Management Chart, Audit & Risk Management organisational chart, University organisational chart, Faculty Governance & Management Structure Chart, University Strategic Directions to 2025, University Strategic Framework 2008, Strategic Priorities 2009-2013, University Statistics 2008, Senior Management Forum members & terms of reference			
CS7	10/06/2009	Web site search	Organisation chart for Research Office			Interview background
CS7	25/06/2009	Web site search	Staff profiles			Interview background
CS7	29/06/2009	Web site search	Shared services committee membership & constitution, VC Group IT membership & constitution, IT strategic plan 2008-2010, IT strategy 2009-2012			
CS7	06/07/2009	Interview Manager IT Coordination (Previously member of IT review project)		1:30pm	60 mins	
CS7	06/07/2009	Interview Director IT Coordination	Updates to IT decision making structure chart	12:30pm	60 mins	
CS7	07/07/2009	Interview Professor Teaching & Learning		10am	30 mins	
CS7	07/07/2009	Interview Vice President Administration		11:30am	30 mins	
CS7	08/07/2009	Interview Manager Research Information Systems		1pm	45 mins	
CS7	09/07/2009	Interview CIO		10am	30 mins	
CS7	20/07/2009	Web site search	List of business school staff			Survey distribution

CS7	23/07/2009	Web site search	IT architecture policies & principles, CIO position description, IT strategy 2 year plan, CIO report to the Academic Board, 2009 IT Development Program Status Report			Case study background
CS7	23/07/2009	Web site search	Information Management Overview for 2006 University Planning,IT Architecture 2006 Edition.			Case study background
CS7	10/09/2009	Web site search	Various campus location details			Case study background
CS8	31/08/2009	Web site search	University Information Strategy Committee membership & terms of reference, University organisational structure chart, Information Services governance & management, College of Business & Economics IT area description & responsibilities, University Strategic Plan to 2010			Case study background
CS8	15/09/2009	Web site search	Interviewee staff profiles			Interview preparation
CS8	18/09/2009	Web site search	Division of Information organisation chart, Office of the Vice Chancellor Information Infrastructure & Services Review 2009			Case study background & interview preparation
CS8	22/09/2009	Web site search	Enterprise system definition/ policy, Enterprise system program, Integrated Management Information Systems descritpion & goals, The process for selecting a new learning management system			Case study background
CS8	22/09/2009	Web site search	Academic structure by college, Executive report 2007, Annual report 2008, Enterprise systems management framework, Enterprise systems projects status report, University stastical summary 2008			Case study background

CS8	30/09/2009	Web site search	Division of Information Planning Objectives 2009, Division of Information initiated projects 2008-2009 status report, Division of Information Planning Objectives 2009 for IT environments, Division of Information Structure - Program Areas, University Information Infrastructure & Services Responsibilities, Enterprise Systems Management Framework			Case study background
CS8	30/09/2009	Web site search	Inside Information - Information Services Newsletter September 2007 - June 2009, Assurance Advisory Committees membership & terms of reference, List of Division of Information publications, Information Systems summary			
CS8	07/10/2009	Interview Associate Director Information Systems Project Support		1:30pm	30 mins	
CS8	07/10/2009	Interview Associate Dean Education (Member university IT strategy committee)		10am	75 mins	
CS8	07/10/2009	Interview Associate Director Scholarly Information Services		11am	45 mins	
CS8	07/10/2009	Interview Director Information Services	Updated diagram of IT strategic decision making model	12:15pm	90 mins	
CS8	07/10/2009	Interview Business Officer Research Office		2:30pm	30 mins	
CS8	11/10/2009	Web site search	Academic calendar, Staff directory college of business & economics			Survey distribution

Appendix 9: Schedule of interviews by organisation.

	Case Study	Date	Activity	Documents Collected	Time of interview	Length of interview	Purpose
1	CS1	19/11/2009	Interview E-research Deputy Director	Notated IT strategic decision making model	10am	45 mins	
2	CS1	19/11/2009	Interview Deputy Director Quality Assurance ITS		11am	45 mins	
3	CS1	19/11/2009	Interview Deputy Director Application Services	Notated IT strategic decision making model	9am	30 mins	
4	CS1	23/11/2009	Interview Director Learning & Teaching Development		11am	30 mins	
5	CS1	23/11/2009	Interview Executive Director ITS	Notated IT strategic decision making model	12pm	60 mins	
6	CS1	23/11/2009	Interview Vice President Resources		4:30pm	30 mins	
7	CS2	04/03/2008	Interview CIO	Notated IT Strategy & Planning Committee membership list, Notated ITS organisational chart, Notated University organisational & responsibilities of senior officers chart	11am	90 mins	
8	CS2	11/03/2008	Interview Deputy Vice Chancellor Academic Services		8:30am	45 mins	
9	CS2	12/03/2008	Interview Pro Vice Chancellor Business School		4pm	45 mins	
10	CS2	19/03/2008	Interview Dean of Research School of Humanities		11am	30 mins	
11	CS2	27/03/2008	Interview Director Research & Development		11:30am	60 mins	
12	CS2	27/03/2008	Interview Associate Director Research & Development		11:30am	60 mins	

13	CS2	04/04/2008	Interview Professor Head of Department Electrical & Computer Engineering		11am	30 mins	
14	CS2	04/04/2008	Interview Director of Finance & Operations		2pm	30 mins	
15	CS2	02/03/2009	Interview Research Assistant Business School		10am	40 mins	Survey clarification & validation
16	CS2	02/03/2009	Interview Lecturer Business School		11am	40 mins	Survey clarification & validation
17	CS2	03/03/2009	Interview Associate Professor Business School		10am	40 mins	Survey clarification & validation
18	CS2	03/03/2009	Interview Lecturer School of Humanities		2pm	40 mins	Survey clarification & validation
19	CS2	03/03/2009	Interview Lecturer Business School		9am	40 mins	Survey clarification & validation
20	CS2	04/03/2009	Interview Business Manager Business School		9am	40 mins	Survey clarification & validation
21	CS2	05/03/2009	Interview Senior Lecturer Business School		11am	40 mins	Survey clarification & validation
22	CS2	05/03/2009	Interview Lecturer Business School		1pm	40 mins	Survey clarification & validation
23	CS2	05/03/2009	Interview Senior Lecturer Business School		3pm	40 mins	Survey clarification & validation
24	CS3	20/02/2009	Interview CIO	IT governance framework chart, updated university committees organisation chart, Notated IT Services structure chart	8:50am	90 mins	
25	CS3	13/08/2009	Interview Manager IT Support Services		1:30pm	45 mins	
26	CS3	13/08/2009	Interview CIO (follow up interview)		9am	60 mins	
27	CS3	24/08/2009	Interview Director Research Faculty Science & Engineering		9am	30 mins	

28	CS3	26/08/2009	Interview Chief Financial Officer/ Vice President Resources		10am	45 mins	
29	CS3	27/08/2009	Interview Academic School of Computer Science		11am	30 mins	
30	CS4	06/10/2009	Interview COO	Updated IT strategic decision making diagram	10am	75 mins	
31	CS4	06/10/2009	Interview Director of Information Management		11am	45 mins	
32	CS4	06/10/2009	Interview Senior Manager Outsourcing		12:15pm	45 mins	
33	CS4	06/10/2009	Interview Associate Dean Education Business & Government		1pm	30 mins	
34	CS4	06/10/2009	Interview Manager Human Resource Management Systems		2pm	30 mins	
35	CS4	06/10/2009	Interview Manager Research Office		3pm	30 mins	
36	CS4	06/10/2009	Interview Director Teaching & Learning Centre		9am	30 mins	
37	CS5	24/08/2009	Interview Teaching & Learning staff		1:30pm	30 mins	
38	CS5	24/08/2009	Interview CIO & Director ITS	Organisation of IT, Current IT Strategies, IT Planning process, 2008/9 Planning.	3pm	90 mins	
39	CS5	25/08/2009	Interview Manager Strategic Projects & Policy		11am	40 mins	
40	CS6	13/07/2009	Interview Dean of School of Business		10:30am	50 mins	
41	CS6	13/07/2009	Interview Executive Director of Administration		11:30am	45 mins	
42	CS6	13/07/2009	Interview Assoc. Dean Research		1pm	30 mins	

43	CS6	14/07/2009	Interview Manager Infrastructure Services		1:30pm	50 mins	
44	CS6	14/07/2009	Interview Manager Research Office		10am	30 mins	
45	CS6	14/07/2009	Interview Director of Information Services		11:30am	60 mins	
46	CS6	14/07/2009	Interview Manager Business Applications		2:30pm	45 mins	
47	CS7	06/07/2009	Interview Manager IT Coordination (Previously member of IT review project)		1:30pm	60 mins	
48	CS7	06/07/2009	Interview Director IT Coordination	Updates to IT decision making structure chart	12:30pm	60 mins	
49	CS7	07/07/2009	Interview Professor Teaching & Learning		10am	30 mins	
50	CS7	07/07/2009	Interview Vice President Administration		11:30am	30 mins	
51	CS7	08/07/2009	Interview Manager Research Information Systems		1pm	45 mins	
52	CS7	09/07/2009	Interview CIO		10am	30 mins	
53	CS8	07/10/2009	Interview Associate Director Information Systems Project Support		1:30pm	30 mins	
54	CS8	07/10/2009	Interview Associate Dean Education (Member university IT strategy committee)		10am	75 mins	
55	CS8	07/10/2009	Interview Associate Director Scholarly Information Services		11am	45 mins	
56	CS8	07/10/2009	Interview Director Information Services	Updated diagram of IT strategic decision making model	12:15pm	90 mins	
57	CS8	07/10/2009	Interview Business Officer Research Office		2:30pm	30 mins	

Note: This schedule includes one follow up interview and one interview with two respondents. In all 55 non-repeat interviews were conducted with 56 participants.

Appendix 10: A selection of additional interview comments on financial issues.

No.	Case Study	Position	Comment
1	CS1	CIO	Generally speaking there is a moral understanding across the university that IT is under-resourced and something needs to be done but nobody will give up money to make it happen.
2	CS4	COO	We are significantly under resourced. If you under resource in any one year you get one kind of impact. But when you under resource IT for seven/eight/nine years you have a level of risk exposure that's entirely different.
3	CS6	CIO	No, not happy with the budget. I think we're under-resourced. Not seriously but we are under-resourced. I think if you look across the universities in Australia we're down at the bottom end of expenditure. A reasonable high end of customer satisfaction so I think we keep doing it. We keep doing more with less all the time and it shows. It shows in the staff; morale is lower, they're anxious, there's a lot of stress.

Appendix 11: A selection of additional comments on faculty and central IT relationship.

No.	Case Study	Position	Comment
1	CS6	DVC Administration	I would like the review outcome to be more control by ISD so that it is managed from one point so that we can maximise the efficiency but the problem associated with that and the reason why I used that strong word was because the academics in those faculties that are independent just feel that they don't want certain decisions to be made by ISD. Even though in the end they might in fact be the same decisions but they just want the control.
2	CS6	CIO	He [a faculty executive dean] finally got a computer on his desk I think about six months ago. He's not IT literate. He hates centralisation. He has no support for central IT at all. And that's a bit of a problem because he's very senior in the place.
3	CS6	CIO	The faculty IT areas do not come under the umbrella of the Director of IT. That's part of the problem. Part of the problem is that the faculties were in the position to develop their own IT governance kinds of issues and develop their own systems in some cases and that's why the issue's come up as a resource issue. Is this the most efficient use of resources?
4	CS2	CIO	Numbers aren't firm yet because we're still … for example Science and Engineering are just forming up into a faculty team. So they now know they've got thirty four people whereas before we started they didn't know how many they had. Health Sciences didn't know how many… they had fourteen. As I say, they didn't know how many IT people we had. We do now. We're starting to know now.
5	CS4	COO	The business owners have not paid sufficient attention to the need for rigorous business processes and business rules to populate our systems with accurate data and so one of the characteristics of our IT environment that we're gradually fixing is that there was a significant level of inaccuracy in data… dirty and incomplete and inconsistent across different systems.

6	CS5	CIO	I tend to be the driver because I find that a lot of people don't seem to be interested in IT. … I think there is a need to develop a university wide approach to IT but as I said before the university needs to mature a fair bit before it would understand and even accept the idea of something like an IT steering committee.
7	CS6	DVC Administration	I would hope that the decisions are made much more by people who know what they're talking about. I think that's probably more likely if IT is centralised. That might be very naive, it might be very Mary Poppinish but the structure that we've got now with exec deans making decisions and most of the time they don't know what they're talking about, they know nothing about it. Now I don't know. I'm not an expert either, which means I'm prepared to take advice from the experts. But the problem with the exec deans is that they're not prepared to take advice from the experts.

Appendix 12: A selection of additional interview comments on user involvement.

No.	Case Study	Position	Comment
1	CS2	CIO	I looked at their [Science faculty] IT issues and when I took them to the Dean of Science she was very disappointed and upset because the issues were trivial but she didn't know about them. There was no printing in mass. They couldn't do any printing. It cost $200. I mean, for Christ's sake. But every math's student would complain but there was no mechanism for them to complain.
2	CS4	COO	If we don't get broad based participation IT is still doing their best and still just does it from an IT perspective. People go 'yeah, I suppose so. I hear what you're saying and I suppose I'm convinced.
3	CS7	CIO	At the end of the day the faculties when they want something they'll expect to get it and if the shared service is standing in the way of doing that, of getting that then that's when the problems will arise. Go outside the guidelines or it could be that they want to get a new service, a new application written or something and we're seen as being too slow so they go out and do it. That will happen.
4	CS8	CIO	I find that now when I talk to the IT managers and the discussions I've been having with them you know your world better than any of the people in the middle do because you live it and you deal with it every day. So why don't you work with us, have a look at what we've got here with respect to infrastructure, services, expertise or whatever it might be, know about the challenges in your place and work out how collectively we can overcome that so you can deliver services back into your world using infrastructure that's already been funded by the university anyway and optimise its use.
5	CS3	Chief Financial Officer	User input is absolutely fundamental. As part of the new structure we are creating a relationship manager position and we are establishing a number of forums that deal with various systems and different levels of users.

6	CS3	CIO	. And this came out of my background in outsourcing. In outsourcing the most successful outsourcing ones are when you actually have a senior person purely and solely responsible for relationship management. So we sort of combined that with no committees, relationship management functions and I think we've hit the right spot with everybody.
7	CS1	CIO	College and the school input are very important and come through the committees. ETAG [Education Technical Advisory Group] and web steering committee, RTAG [Research Technical Advisory Group] – they promote that level of discussion as well.
8	CS3	CFO	I think one of our challenges as a group for all of us involved in this part of the business is not to think that we know the answers but to try and find good ways of accessing what the various stakeholders believe are important to them.
9	CS3	CIO	The other important thing about the governance structure here is that we're placing responsibility back on the faculties and the service centres to have their own IT governance within their faculty. Not governance in saying can we do this, we can't do that but governance in terms of bringing forward ideas and initiatives into this structure.
10	CS5	CIO	I find with most things that people don't think strategically about what they're doing. Being an academic is a very self absorbed role and that's what they do and that's why they're pretty good at what they do because they're absorbed and they know what they're doing though strategically they wouldn't have a clue.
11	CS1	VP Resources	You've got to have people out there who are willing to feed into you on an ad hoc and friendly basis. The CIO has in his structure frontline client service people who are supposedly the eyes and ears of IT out there and supposedly are the advocates for people out there into IT. There's an IT portfolio manager in each of the three colleges.
12	CS1	CIO	The college IT managers report through to me and they're active in the colleges and obviously in tune with the needs of the colleges.

13	CS1	CIO	The reference group is a big input into the strategies from the user point of view. … Typically what we would find when we do the town hall meetings and going to meet with the heads of schools and sort of more public forum meetings typically what we would find is more a reinforcement of what's coming out of the reference group.
14	CS2	CIO	We need to have consistent IT committees in every faculty that had the same terms of reference and have clear accountability responsibility. We have to have a university enterprise architecture group who meet and provide advice in terms of the decisions in terms of enterprise architecture.
15	CS3	CIO	Where we're heading with our structure is we are basically putting in a series of forums and in fact there are four or five of those. One is a student forum which is run by the vice chancellor. So that's in existence at the moment. Then these will be lines of business so there's a research forum, there's a teaching and learning forum, there's a enterprise systems forum and there's a... I think this might be student. This will all be facilitated by the relationship management function in ITSC.
16	CS3	CIO	It's exactly what we wanted and the input from the research forum was terrific. Out of that we've got some operational things that we're going to do to help the researchers. This will feed into our strategies if required. So we'd expect the same thing to come out of each of these other forums.
17	CS4	COO	So there's a bit of coming at it from both angles from a strategic level of recognising that's a priority and also the bottom up, from the faculties and users.
18	CS5	CIO	Once we go through the process of understanding the university's strategic plan and I'll actually go out to the various areas which is something that we did in last plans. Go out to the directors, go out to the academic areas and talk to them about things. You don't get a lot of input from a lot of areas. A lot of things are done quite ad-hoc. It's more of a case of well, we'll put this system in because we think it's a good idea.

19	CS3	CFO	I think identifying and satisfying user needs and the cost of that will be the key challenges for us. We are getting the right linkages so that people in the faculties and service areas can have some good strong input and build their relationships with IT.
20	CS3	CIO	The problem we had in the previous structure was it was committee focused and they were large committees. They were fifteen/twenty people. It was this university democracy gone amok. Low level decisions were put in front of the committee over an extended period of time and as a result of that the membership deteriorated to non decision makers. So it started off with executive deans and then they would go and they'd say why are they asking me to make a decision on this, I can't be bothered, I've got better things to do, I'll send somebody else. So gradually the power of the committee diminished.
21	CS3	CIO	The underlying subtext is no committees. Previously there would be any number of committees. They're a waste of space as we all know. … The idea is that in this governance structure we'll get the faculties and the service centres to come up with their own IT initiatives and governance. To say what they want and then we're [Central IT] putting it in place.
22	CS3	CIO	The University has had a couple of very bad outcomes from the old governance structure. A lot of money spent on applications that were basically ineffective, don't work. That was because they were technology driven. The techos got hold of a technology and said this will be fantastic and then sort of then built an application around it and then tried to make it work and implement it. Basically it failed. That's why it's now enterprise led.

Appendix 13: A selection of additional interview comments on the outcomes of IT governance.

No.	Case Study	Position	Comment
1	CS1	Vice President Resources	There's a university strategic plan, which runs to the end of next year and that will be refreshed with a new five year plan rolled forward from 2010 to 2015. Once that is in place then you need new plans be that IT, HR, finance, property, you name it – we will move it to a five year plan. We already have an IT plan to 2010. That attempted to align some of the IT projects, functions and aims to the current strategic plan.
2	CS1	Vice President Resources	It's [IT] a key business partner. IT should not lead the business. It's an enabler. The people in IT need to engage with the front line be they academics, researchers or be they administrators to find out what the frontline actually needs and to the best of its ability to deliver on those needs. Clearly prioritise. You can't deliver all the dreams and aspirations but try and come up with the right sequence of action so that we retain our strong position and to some extent catch up with our technology position.
3	CS1	CIO	So it's trying to get that balance with all levels contributing to the direction of IT. We did go through a planning process last time which we thought was very successful. As you say, aligned it to the strategic plan for the University and the academic areas. That's certainly what we'll do this time around.
4	CS2	CIO	Alignment at an institutional level is fairly close. If you did it at a faculty level, because we haven't had consistency in terms of faculty approach, that would probably not be true. So my challenge is to get that consistent. But as an institution in terms of where we're going I think we haven't done too badly.
5	CS2	CIO	The other thing we did this year was we aligned all of the faculty operational plans with the enabling plan. So we have the university strategic plan, which it's fairly difficult to tie to. From that we took guidance in terms of developing the IT enabling plan because there's only one strategic plan but we never then operationalised it.

6	CS3	CIO	The way we're terming it is better alignment of expenditure against our objectives. This really is part of the governance framework and about how we get control of all IT spending from a governance viewpoint.
7	CS3	CIO	We have lots of business plans. We have an overall what we call strategic priorities around teaching and learning, flexibility, research, sustainability. Then underneath that we have operational plans and that's across the whole university. Every faculty, every service centre has them. There is a planning framework starting off with the strategic priorities from council that we use to develop our operational plans.
8	CS5	CIO	There is no alignment, no coherence. Now we've gone back to let's develop a well founded strategic plan but it has another level of detail below it not necessarily aligned to the portfolios of the DVCs as well. The existing plan is DVC commercial, DVC research, DVC academic and DVC regional. It was just like vertical silos.
9	CS7	CIO	The alignment happens through our annual planning process. Shared services are also an aligning process now. So they're the major alignment processes for alignment with VCGIT. The innovations are being driven by the E-Research centre and the E-Education centre. So their focuses are on innovation, which is another major aspect. The University is really keen on innovation being the leading edge.
10	CS6	DVC Administration	The key issue of that report is that there was real concern that the way IT was managed did not lead to the most efficient use of that particular kind of resource. … We are a highly devolved university especially when it comes to IT I don't know how you measure IT expenditure. That's one of the reasons for the review. It's one of the issues for the review because we don't know how much we spend on IT.
11	CS2	CIO	We have regular reviews often facilitated by either an external risk manager or risk assessor and they come in and we work through a workshop, which looks at a risk matrix which we review. We look at what the risk is. We measure the scale of the risk. We look at what treatments we've got in place and then we come up with a measure of whether we think we've accepted it

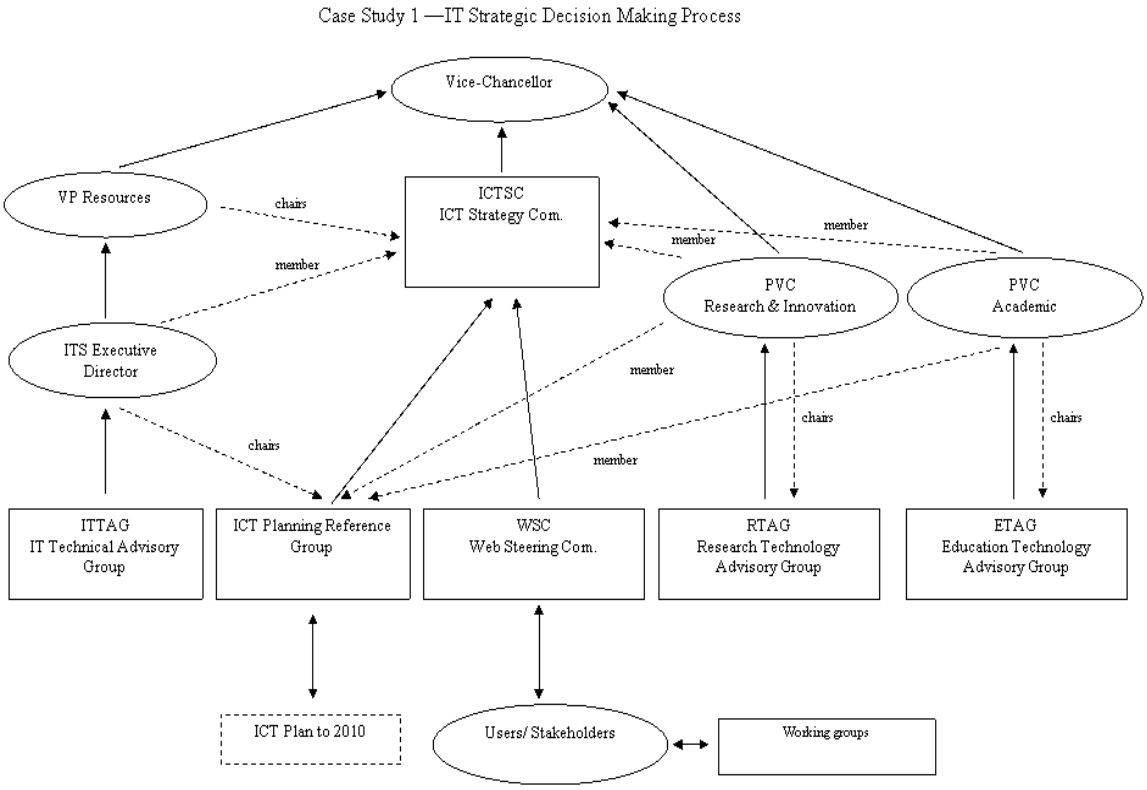
			or not and then what actions we need to take. That's done… we initiated it way back in 2005 and it was done again last year and it will be done again this year.
12	CS3	CIO	We've got a risk management and audit assurance service centre that oversees risk management throughout the university. Part of our overall organisational planning and management we've got an IT risk register that we maintain although we're under a bit of pressure because I think that's one of the things that has fallen into disrepair.
13	CS4	COO	Priorities in broad terms are fixing all the disaster recovery and risk management aspects of the function. Setting up a more elaborate set of support functions for research as well as teaching and learning. Extension of the current outsourcing arrangement. I think there are other areas where we can benefit from some outsourcing.
14	CS6	Executive Director IT	We're in the process of business continuity planning across the university and part of that is an IT disaster recovery plan. I still want to call it a business continuity plan because I think that is better than disaster.
15	CS6	Executive Director IT	I'd like to say to the university that we can provide you with a maximum acceptable downtime of half a day for all these systems any time of the year and it's going to cost you three million dollars. Are you willing to pay three million dollars? They'll say no, we haven't got it. I'll say okay we'll do it for a day and then we'll drop to a million dollars. Those sorts of discussions have never been held and they will be.
16	CS3	CIO	In our organisation chart we have created a new position called threat management. This is IT specific. The person in there will be responsible for system recovery, disaster recovery and they'll work with the business continuity person in the risk management and audit group so they'll work very closely with that person in terms of business continuity. Also our security management is taking a much more strategic view of our security framework.

Appendix 14: A selection of additional comments on the monitoring of IT service levels.

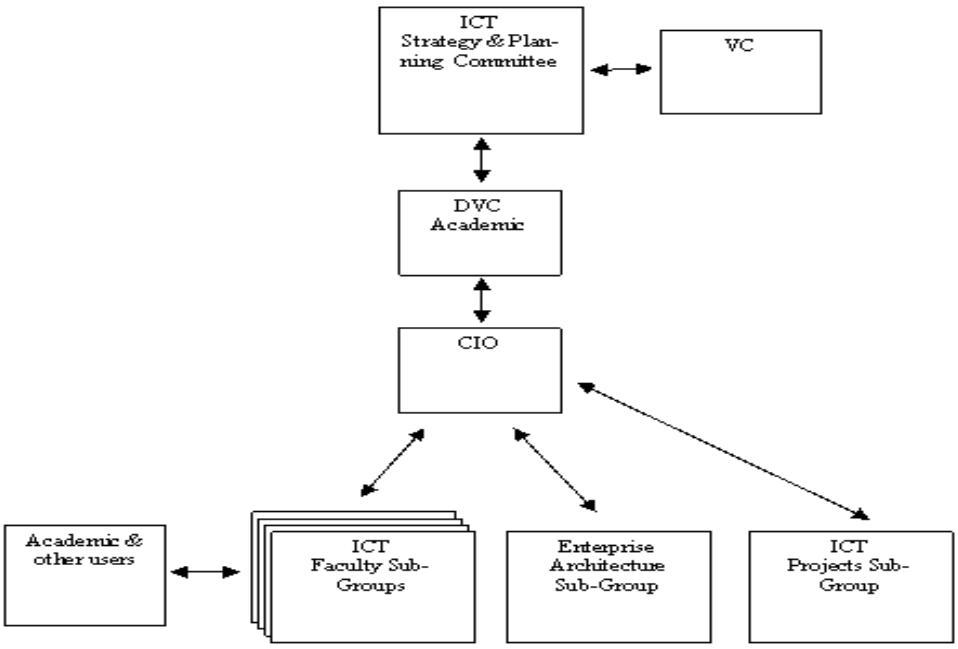
No.	Case Study	Position	Comment
	CS2	DVC Academic	I have a business support unit of three people who collect IT performance measures and prepare reports for me. The people who collect them are not the people who work in the area.
	CS3	CIO	So my quarterly report which is full of metrics and we're just about to produce the next quarter's report and that will include the metrics out of that survey. So that will go up to the university. The last one was eighteen pages. The feedback was 'terrific report but can we have it in five pages'. We'll see if we can get it to ten. The idea is metrics with not much text. Here's a graph, here's the state of metrics measured over time, here's an interpretation of that, we're doing well in this area, we're not doing well in that area. … We run surveys. Every time there's a service call we randomly select a percentage and when they're closed we send out a survey to the person who registered the call to find out how happy they were. There are a whole lot of questions that we ask. We do that in that break and fix area which is our main contact with the user community. We also participate in benchmarking. We've just finished a survey. We've run a standard survey across the whole user community for the helpdesk. We've just got the results from that back and the results of that – we were at the top end in every questionnaire.
	CS3	CIO	I wouldn't call them key performance indicators but there are objectives that you get measured. You set the objectives and then at the end in this service centre review each one of those you stand up and justify your position against those. In that sense yes we have key performance indicators but they're not ones that are there forever.

	CS3	CIO	We will try and develop a balance scorecard approach out of the quarterly report. We haven't really developed the concept to the extent yet of measuring satisfaction with the IT initiatives from the user's point of view. I think to get the value out of the process the next step is we've got to report back and review what we have done. That's the logical next step.
2	CS6	Executive Director IT	In terms of the customer service is really the percentage of calls that we handle that we can get rid of on the telephone. That's consistently between sixty-seven and sixty-nine per cent so we're happy with that. Then the standard service level model how many requests are now in the one week. We keep those records and we keep that quite fastidiously. We keep downtime. We keep records of service downtime as a result of that. Do we do any follow up of satisfaction [with service provided] – no, not really.

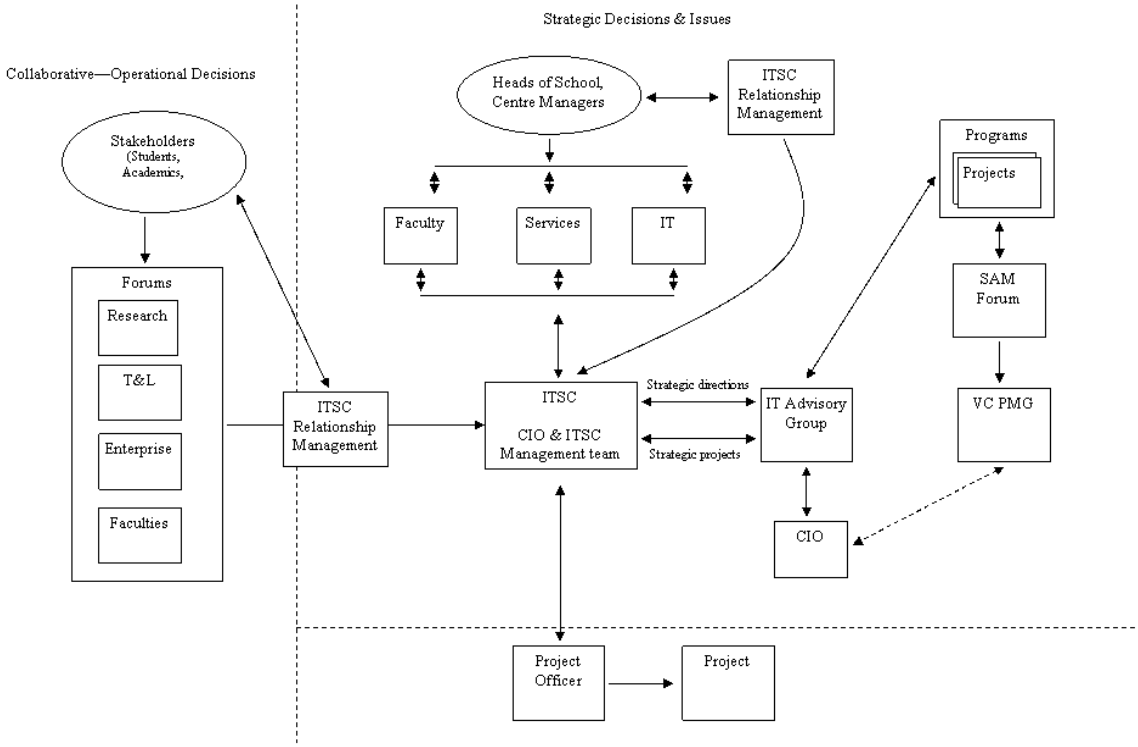
Appendix 15: IT decision making structures for the case studies.



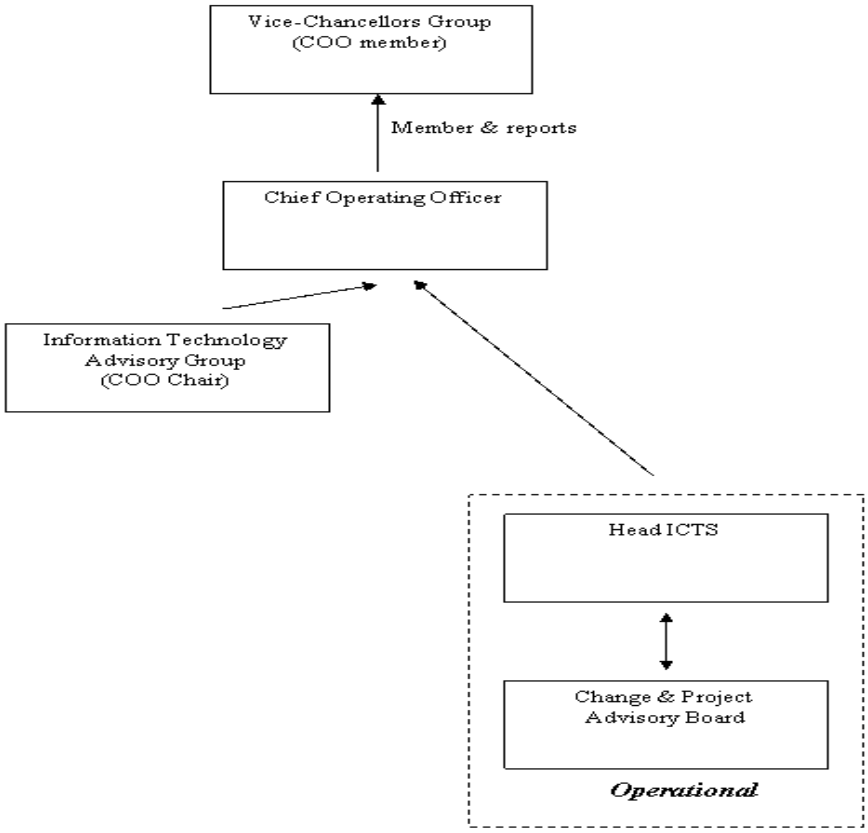
Case Study 2 — IT Strategic Decision Making Model



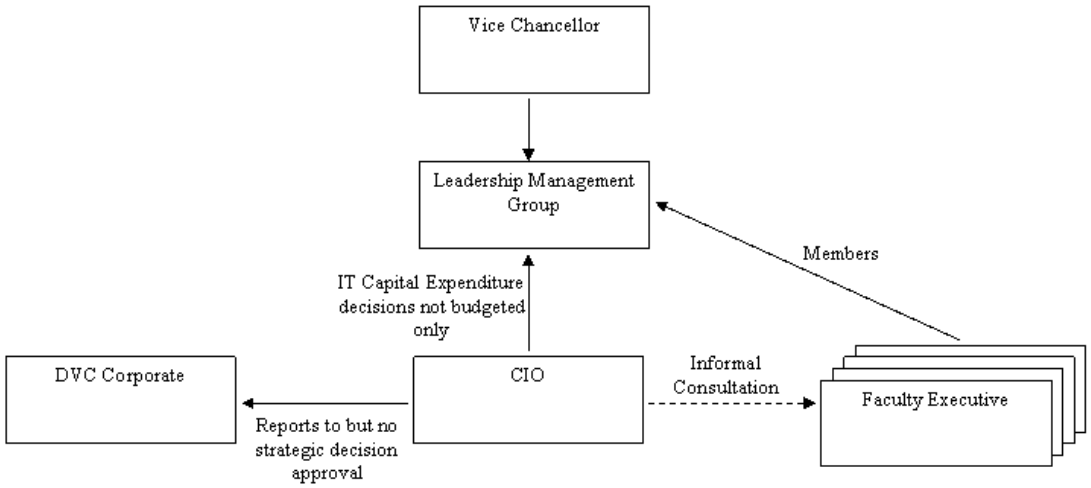
Case Study 3 — IT Strategic Decision Making Process



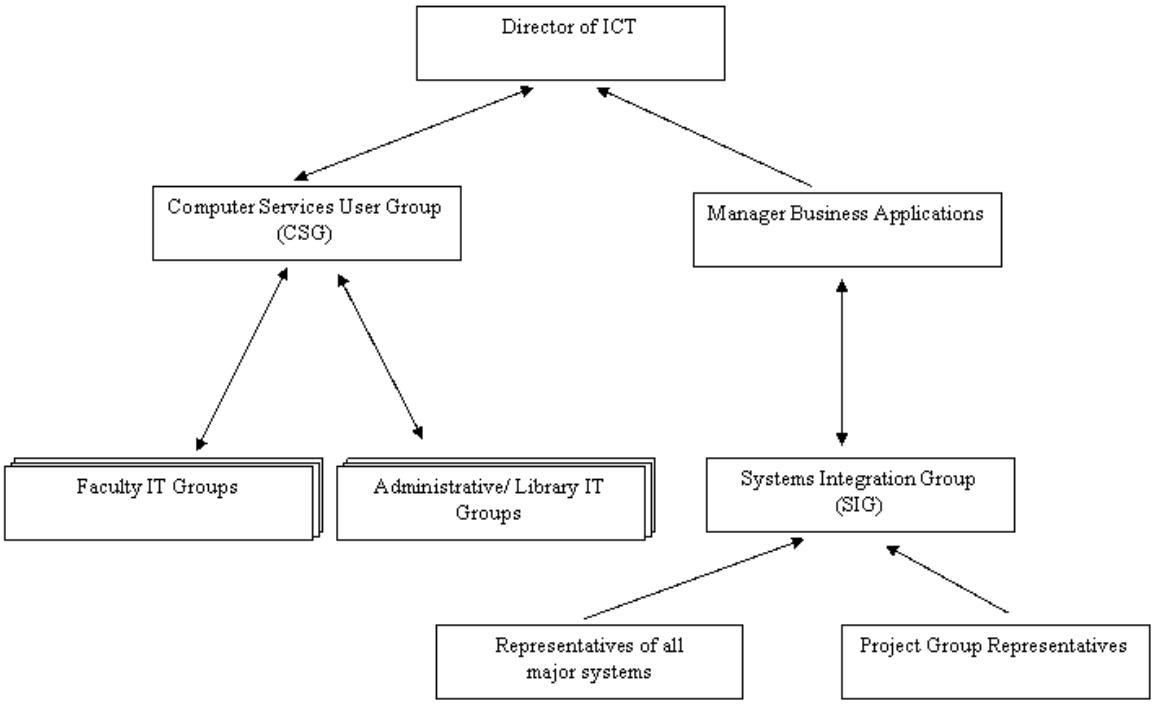
Case Study 4 — IT Strategic Decision Making Model



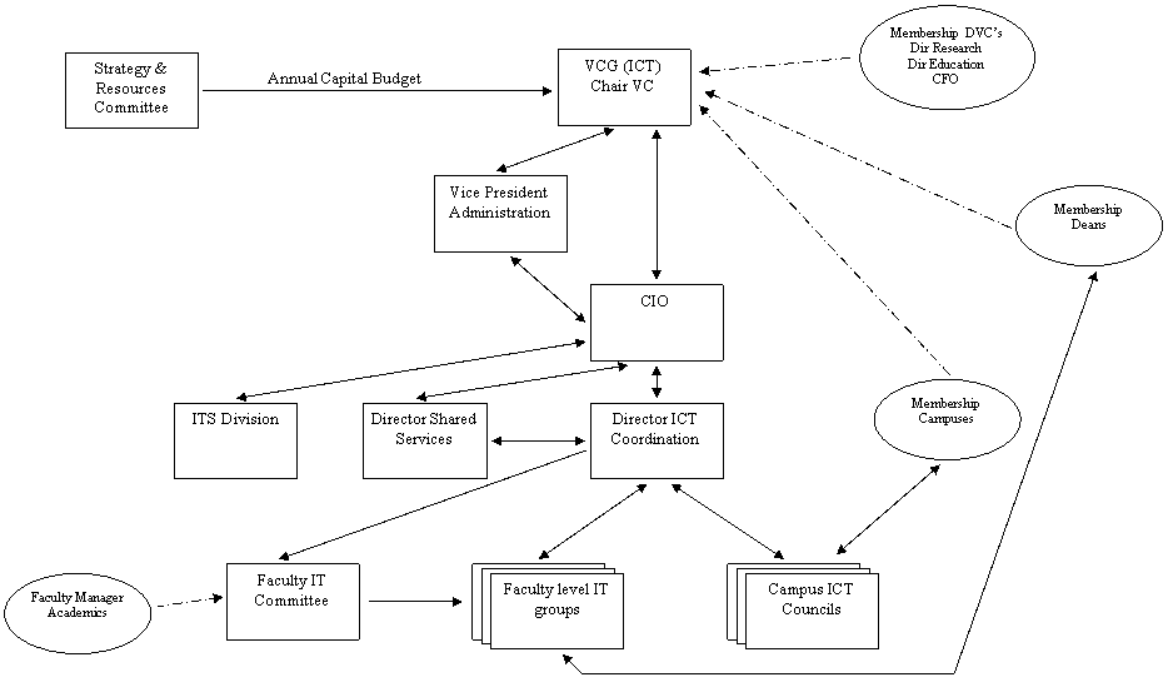
Case Study 5 Strategic IT Decision Making Structure



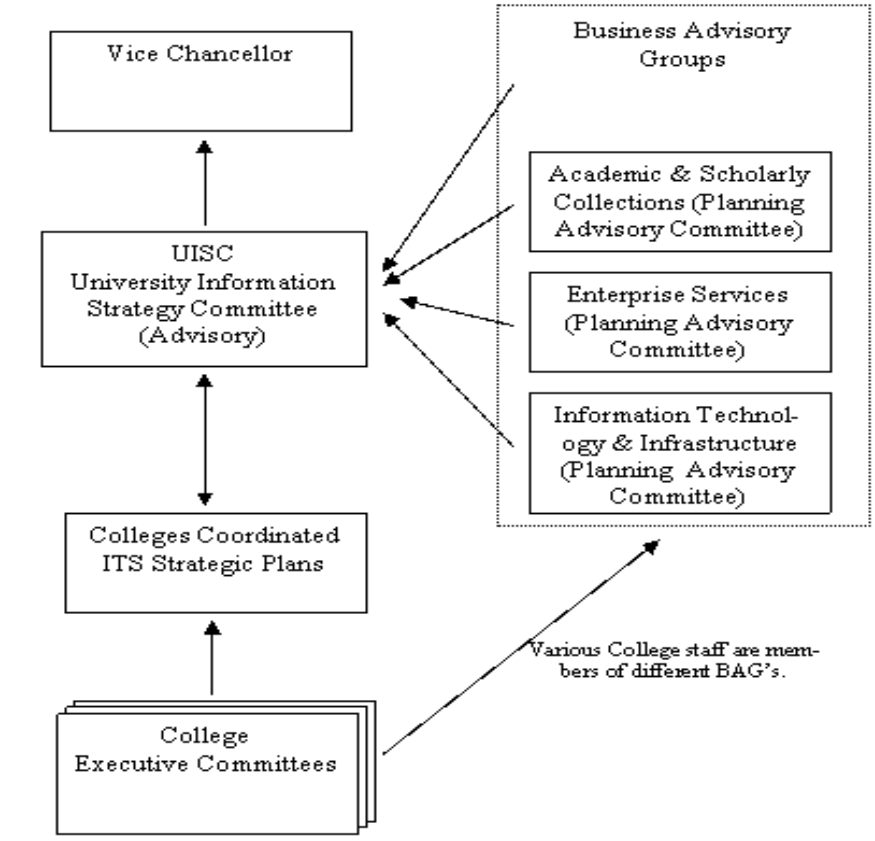
Case Study 6 — Model of IT Decision Making



Case 7 — ICT Strategic Decision Making Structure

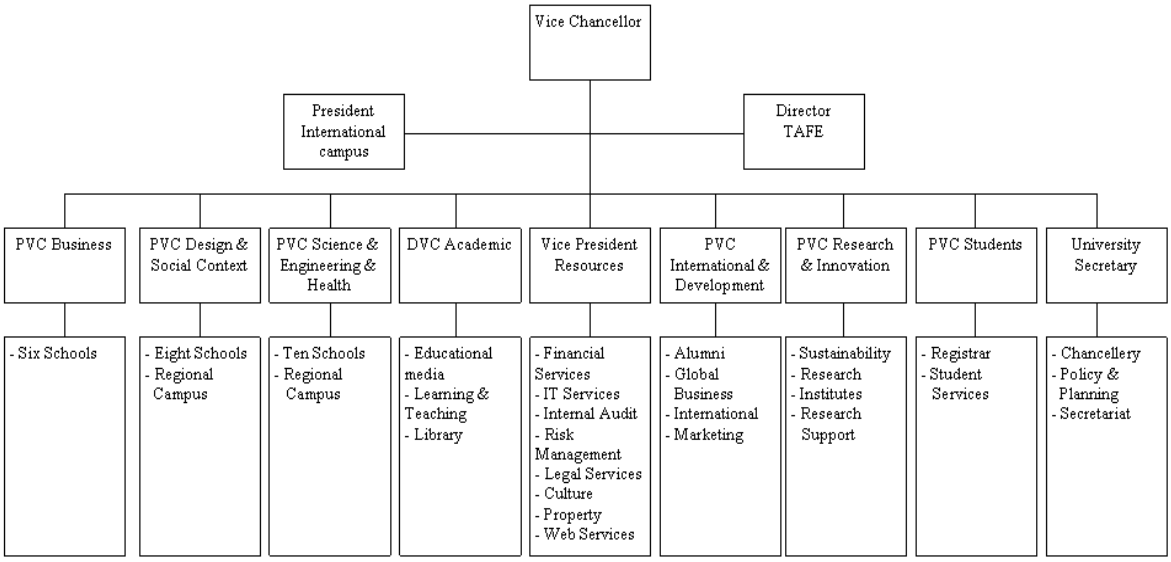


Case Study 8 — IT Strategic Decision Making Model

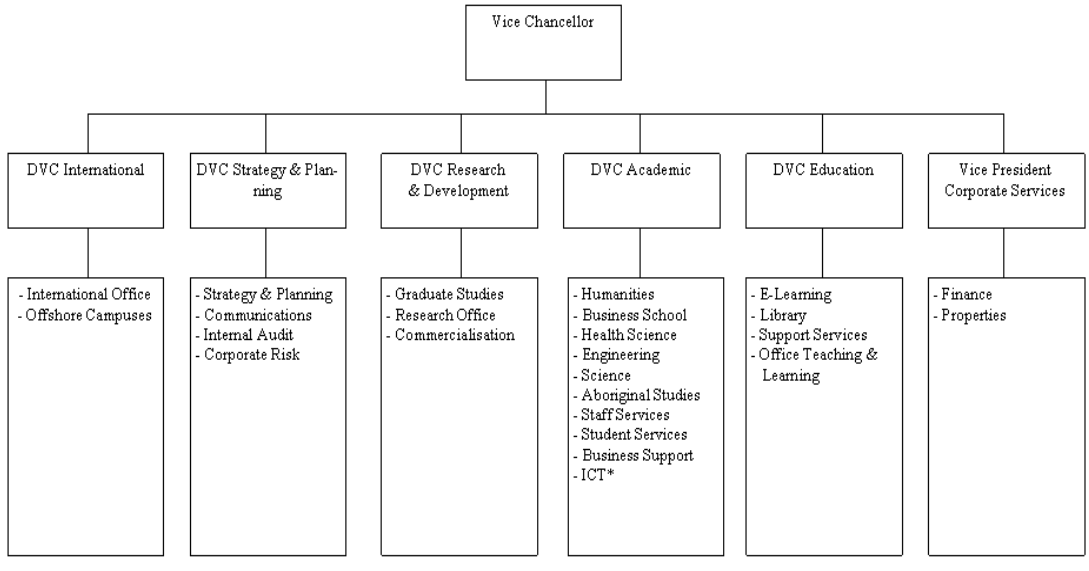


Appendix 16: Corporate decision making structures for the case studies.

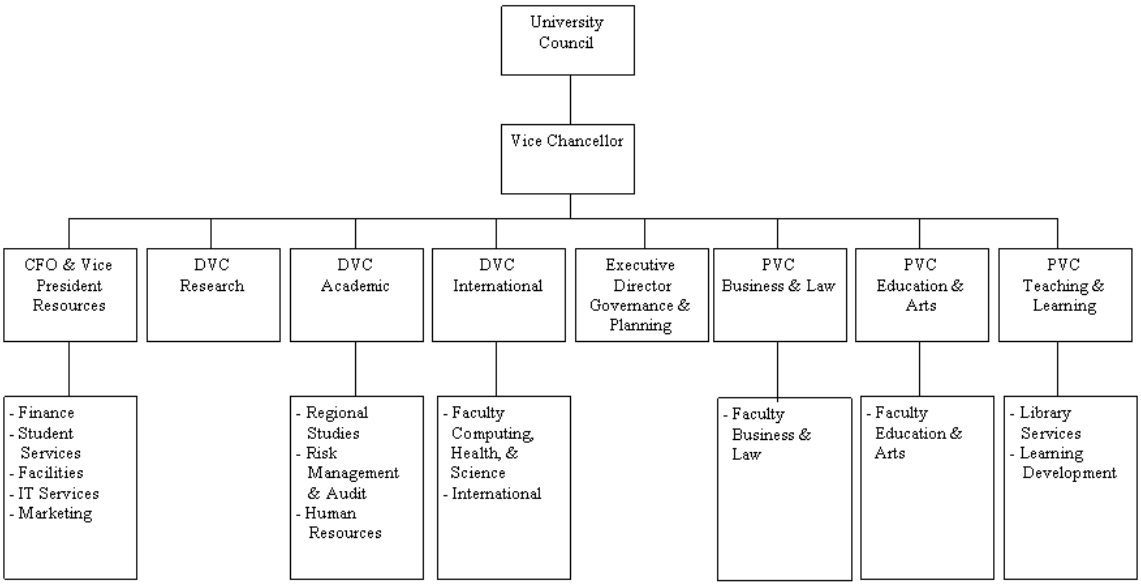
Case Study 1: University Administrative Structure



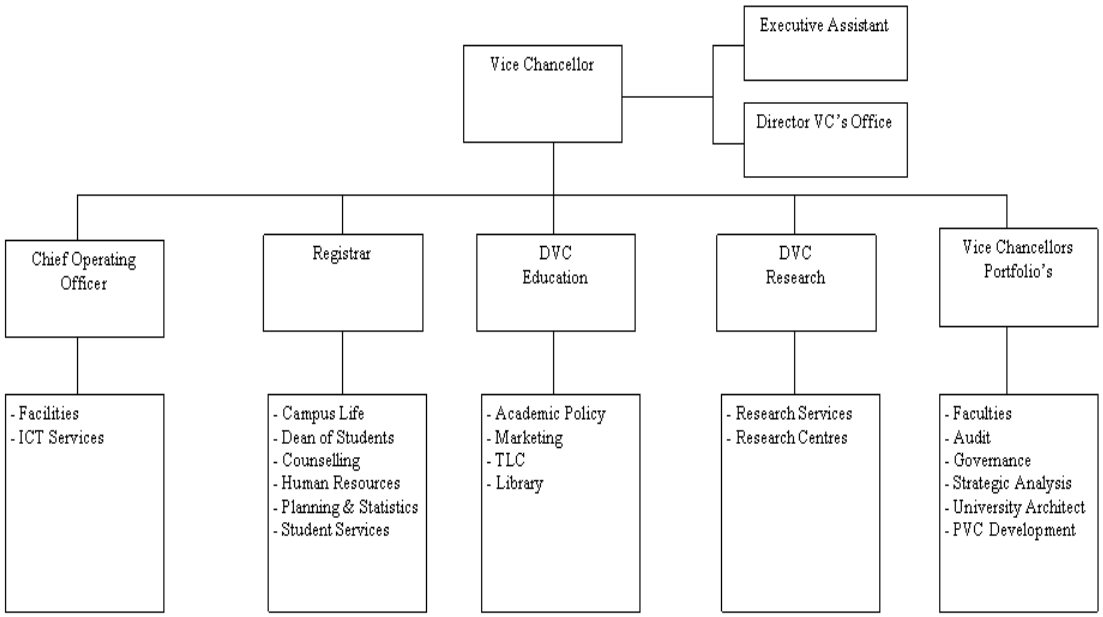
Case Study 2: Administrative Structure of University



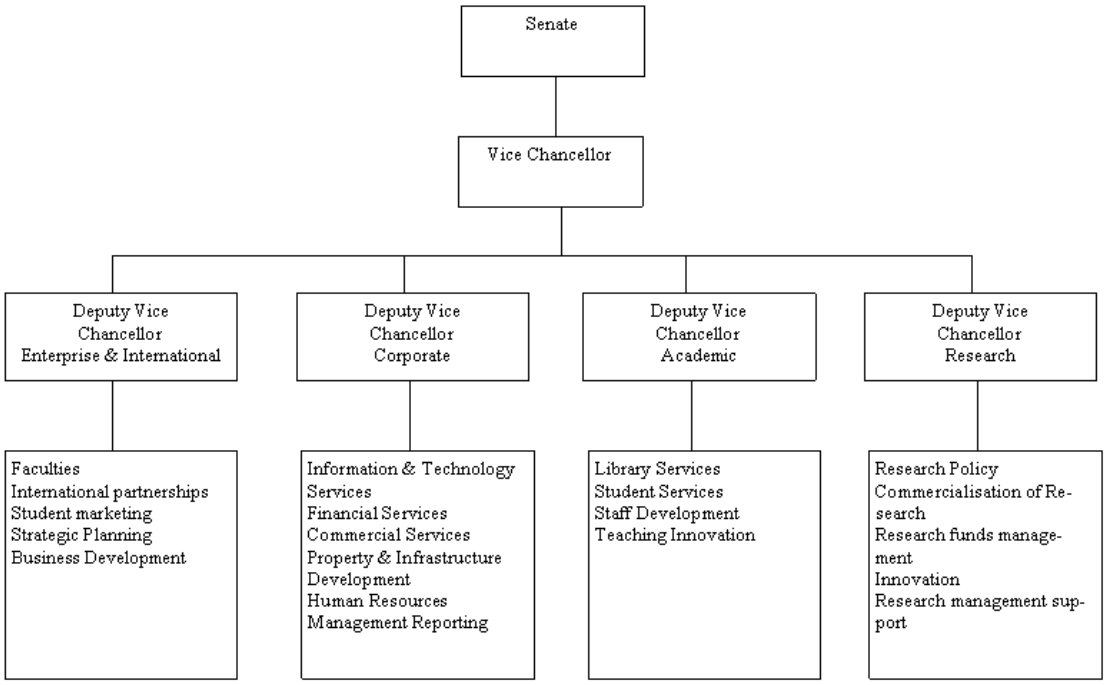
Case Study 3 - Organisational Structure of the University



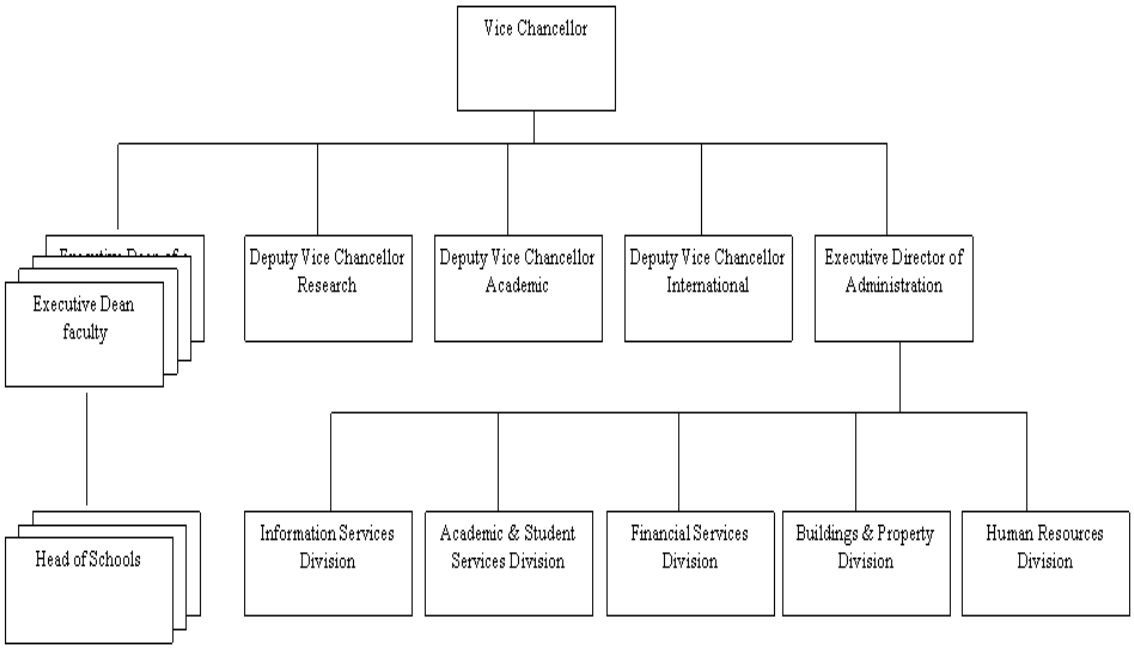
Case Study 4: Administrative Structure of the University



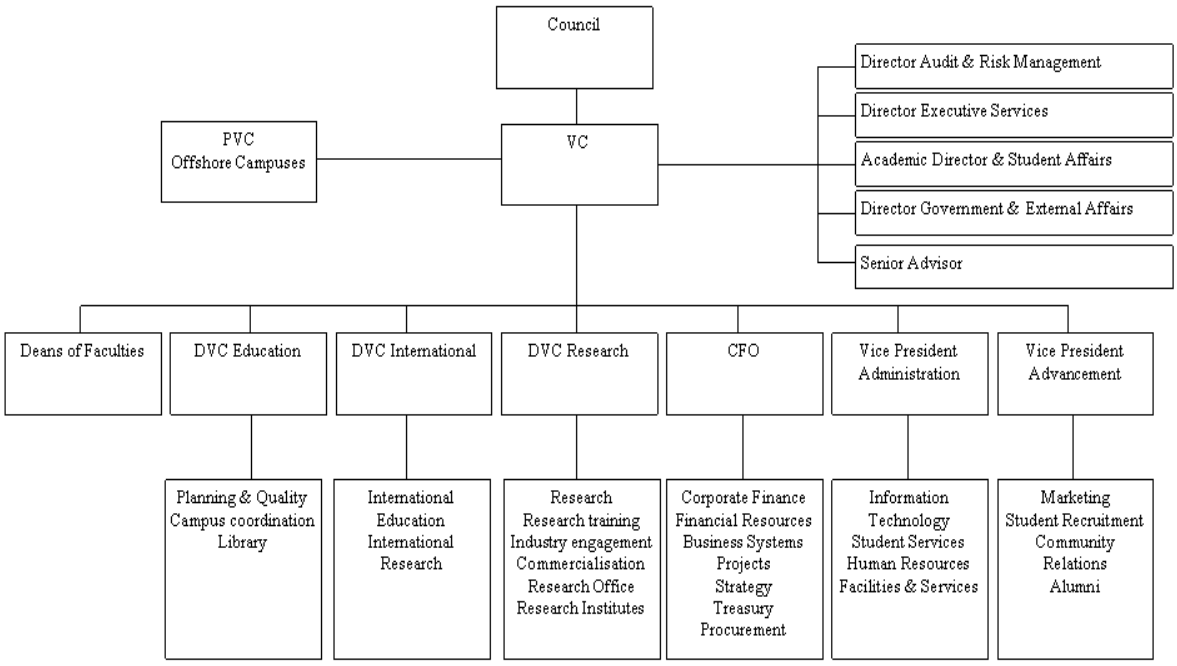
Case Study 5 - Corporate Administrative Structure



Case Study 6 - Administrative Structure



Case Study 7 - Corporate Administrative Structure



Case Study 8 - Corporate Administrative Structure